

Volume 18

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

BEFORE THE HONORABLE WILLIAM H. ALSUP

ORACLE AMERICA, INC.,	)	
	)	
Plaintiff,	)	
	)	
VS.	)	No. C 10-3561 WHA
	)	
GOOGLE, INC.,	)	
	)	
Defendant.	)	San Francisco, California
	)	May 8, 2012

**TRANSCRIPT OF JURY TRIAL PROCEEDINGS**

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(Appearances continued on next page)

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Oracle Corporate Representative

**CATHERINE LACAVERA**  
Google Corporate Representative

P R O C E E D I N G S

MAY 8, 2012

7:30 A.M.

(The following proceedings were held in open court,  
outside the presence of the jury.)

**THE COURT:** Welcome back. Good morning.

**ALL COUNSEL:** Good morning, Your Honor.

**THE COURT:** Please be seated.

How can I help you this morning?

**MR. JACOBS:** We have some exhibits --

**THE COURT:** All right.

**MR. JACOBS:** -- we've agreed to.

**THE COURT:** Go ahead.

**MR. JACOBS:** The following are moved into evidence, I  
expect without objection: 77. 79. 81. 82. 83. 85.

**MR. PAIGE:** No objection, Your Honor.

**THE COURT:** Received.

(Trial Exhibits 77, 79, 81, 82, 83, and 85 received  
in evidence.)

**MR. JACOBS:** 93. 286. 663.

**MR. PAIGE:** No objection, Your Honor.

**THE COURT:** All received.

(Trial Exhibits 93, 286, and 663 received in  
evidence.)

**MR. JACOBS:** 2746. 2749. 2756. 2775. 2776.

1           **MR. PAIGE:** No objection.

2           **THE COURT:** All received.

3           (Trial Exhibits 2746, 2749, 2756, 2775, and 2776  
4           received in evidence.)

5           **MR. JACOBS:** 89. 90. 91.

6           **MR. PAIGE:** No objection.

7           **THE COURT:** Received.

8           (Trial Exhibits 89, 90, and 91 received in evidence.)

9           **MR. JACOBS:** 82. 94. 87. 388. 662.

10          **MR. PAIGE:** No objection, Your Honor.

11          **THE COURT:** All received.

12          (Trial Exhibits 82, 94, 87, 388, and 662 received in  
13          evidence.)

14          **MR. JACOBS:** Then we reached agreement with Google on  
15          two other exhibits, in exchange for our agreement not to call  
16          Mr. Schmidt live in Phase Two. And those exhibits are 310 and  
17          426.

18          **MR. PAIGE:** No objection.

19          **THE COURT:** Thank you. Received.

20          (Trial Exhibits 310 and 426 received in evidence.)

21          **THE COURT:** Is that it?

22          **MR. JACOBS:** That's it.

23          **THE COURT:** What was the name of that witness?

24          **MR. JACOBS:** Mr. Schmidt, Eric Schmidt.

25          **THE COURT:** All right. Okay. Great.

1 And what can I do for you?

2 **MR. VAN NEST:** Your Honor, before we start, I'm  
3 sorry, I should introduce -- I don't think I've actually  
4 introduced the patent team to the Court. I know you've heard  
5 from a lot of these lawyers, but I think I should do that.

6 **THE COURT:** Of course, yes.

7 **MR. VAN NEST:** Matthias Kamber from our office.

8 **THE COURT:** Kamber?

9 **MR. KAMBER:** Kamber.

10 **MR. VAN NEST:** Kamber, K-a-m-b-e-r.

11 **THE COURT:** Welcome.

12 **MR. KAMBER:** Thank you.

13 **MR. VAN NEST:** Gene Paige, whom you've heard from  
14 before.

15 **MR. PAIGE:** Good morning, Your Honor.

16 **THE COURT:** Good morning.

17 **MR. VAN NEST:** Scott Weingaertner, whom you've also  
18 heard from before, from the King & Spalding firm.

19 **THE COURT:** Welcome back.

20 **MR. VAN NEST:** And Renny Hwang has been here  
21 throughout. He is litigation counsel for Google.

22 **THE COURT:** Welcome.

23 **MR. VAN NEST:** And you know Catherine Lacavera, who  
24 has been here throughout.

25 **THE COURT:** Yes.

1           **MS. LACAVERA:** Good morning.

2           **THE COURT:** Welcome, again.

3           And I know when you do your opening you will  
4 introduce them to the jury.

5           **MR. VAN NEST:** I will do that.

6           **THE COURT:** We might need to have another sheet of  
7 paper to give to the jury. Do you have a similar rearrangement  
8 over there?

9           **MR. JACOBS:** Fred Norton and I will be doing the  
10 witnesses during this phase, Your Honor.

11           **THE COURT:** All right. So, great. What else can I  
12 do for you?

13           **MR. PAIGE:** Your Honor, we similarly reached  
14 agreement on some documents to move into evidence by  
15 stipulation.

16           **THE COURT:** All right. Go ahead.

17           **MR. PAIGE:** 2460.

18           **THE COURT:** 2460.

19           **MR. PAIGE:** 2462.

20           **THE COURT:** All right.

21           **MR. PAIGE:** 2464. 2929. 2955. 2956. 3469. 2072.

22           **MR. JACOBS:** No objection, Your Honor.

23           **THE COURT:** All of those are received.

24           (Trial Exhibits 2460, 2464, 2929, 2955, 2956, 3469,  
25 and 2072 received in evidence.)

1           **MR. PAIGE:** Thank you.

2           **THE COURT:** Anything else?

3           **MR. VAN NEST:** Your Honor, yes. Something happened  
4 in the opening statement yesterday that I did not expect, and I  
5 want to bring it to the Court's attention because Mr. Jacobs  
6 and I, I think, have a disagreement about this.

7           And it has to do with what you can say about a patent  
8 that's been through the Patent Office but is now currently in  
9 re-exam and currently stands rejected. And I'm talking about  
10 the '104.

11           Prior to the opening --

12           **THE COURT:** Wait a minute. Is that one of the ones  
13 we're suing on?

14           **MR. VAN NEST:** Yes. The '104 is one of the two  
15 patents we're suing on. It's been rejected in the Patent  
16 Office. The rejection isn't final.

17           And I understood from Your Honor's earlier rulings  
18 that I couldn't make reference to that. And I don't plan to  
19 make reference to it in my opening.

20           However, when Mr. Jacobs sent over his slides, he had  
21 a slide -- which I'll display on the screen now -- which said  
22 validity is not an issue for trial, and showed three versions  
23 of the '104.

24           And I objected to that and I said, hey, I don't think  
25 I can get up there and say you had seven patents and now you

1 only have two. So there's five of them that have dropped out.  
2 I also I don't think you can say validity is not an issue for  
3 trial just because it's a defense that I had and that I have  
4 withdrawn.

5 So he withdrew that. And he sent me a second  
6 version. And here's the second version.

7 The second version says the Patent Office approved  
8 the '104 patent and solution three times. And I objected to  
9 that. I said, I don't think that's proper. I've withdrawn my  
10 validity challenge. And I don't think you can make reference  
11 to that. I said, if you want to say the patent has been  
12 thoroughly examined, fine. Although, we both know that the  
13 current examination has it standing rejected.

14 So he didn't show this slide. He just showed a slide  
15 showing the reissue. And I don't have any problem with that.

16 But then he got up and said to the jury: When you  
17 study this patent you'll see that it has some history. The  
18 invention was examined a couple of times by the Patent Office,  
19 and the actual '104 is called a reissue. Because the original  
20 patent, which was numbered here, as you can see, line 685, went  
21 through yet another procedure, like the one you saw in the  
22 video, to evaluate it and decide whether it was properly  
23 granted, et cetera.

24 Now, I'm not asking for any particular relief. I'm  
25 not going to get up in my opening and say it's been re-examined



1 now and it's invalid. But, I don't want there to be confusion  
2 so that when I get to the closing I'm in the same awkward  
3 situation.

4           They shouldn't be able to present evidence of how  
5 many times this has been through the PTO. They shouldn't be  
6 able to present evidence of what a thorough examination was if  
7 I'm not allowed to present evidence that on the current re-exam  
8 the patent has been rejected as invalid. I think that would be  
9 improper. I think it would be confusing.

10           I'm not asking for any instruction at this time, Your  
11 Honor, but I don't want to be standing here at the closing, not  
12 having said anything, and be faced with a situation where they  
13 are touting a patent that's been through three times, and I  
14 can't get up and say, yeah, but on the fourth time it's been  
15 rejected.

16           So I just -- I just want to call the Court's  
17 attention to that and seek guidance because I don't want this  
18 to creep up on me.

19           **THE COURT:** Somehow I had the impression that -- and  
20 no one has misled me in any way, but I had the impression that  
21 the ones that were in play now had gotten through the re-exams  
22 okay. I didn't -- I had forgotten -- I probably realized, but  
23 I had forgotten that there was one that stands rejected. Is  
24 that true?

25           **MR. VAN NEST:** Yes.

1           **THE COURT:** Really?

2           **MR. VAN NEST:** The '520 got through. That's the one  
3 on the arrays. But the '104 has been rejected as invalid in  
4 the PTO.

5           **THE COURT:** Why was it rejected?

6           **MR. VAN NEST:** It's not in the same shape that the  
7 other patents that you're thinking about were, in that those  
8 had already gone to final rejection and were finally rejected.

9           This one has an initial rejection as invalid. It's  
10 still kind of working its way through the process. I think  
11 that's the distinction that Your Honor drew --

12           **THE COURT:** Maybe that's it.

13           **MR. VAN NEST:** -- between them.

14           And I'm not complaining about that. I'm just  
15 complaining about what happened to me in the opening yesterday.

16           **THE COURT:** Wait, wait. Well, okay. Now, you're --  
17 I want to go back. What was the reason for the most recent  
18 rejection?

19           **MR. VAN NEST:** Mr. Kamber is more familiar with it  
20 than I am.

21           **THE COURT:** Mr. Kamber, you get to talk.

22           **MR. KAMBER:** Your Honor, there are two pieces of  
23 prior art, anticipatory prior art, under which it stands  
24 rejected. One of them is called Chaitin. That's a patent  
25 piece of prior art.

1           **THE COURT:** You know, I know that the lawyers call it  
2 "piece of prior art." I don't know why, I just don't like that  
3 term. It's just my own personal preference. You're free to  
4 use it.

5           I would rather hear "an item of prior art" reference,  
6 "an item." But the word "piece" -- I know that's the way you  
7 lawyers talk, and it's perfectly fine. There's nothing wrong.  
8 But whenever someone says "piece of prior art," I start  
9 thinking about the use of that term and then I lose track.

10           **MR. KAMBER:** Fair enough, Your Honor. It's a patent.

11           **THE COURT:** Item, item of prior art. So two items of  
12 prior art have been used to anticipate?

13           **MR. KAMBER:** Correct.

14           **THE COURT:** Okay.

15           **MR. KAMBER:** One of them is a U.S. patent to Chaitin,  
16 C-h-a-i-t-i-n. And the other one is a book, a textbook by --

17           **THE COURT:** What happens if we get a damage award  
18 here, and then it's determined to be invalid by the PTO?

19           **MR. KAMBER:** I think the patent blows up, at that  
20 point.

21           **THE COURT:** What happens to the damage award?

22           **MR. KAMBER:** Well, it depends on if there's final  
23 judgment, at that point, or there is appeal pending --

24           **THE COURT:** Let's assume there is a final judgment.

25           **MR. PAIGE:** If there's a final judgment and it blows

1 up before appeal, I believe that the time judgment doesn't  
2 necessarily stand based on the appeal.

3 I think it's sort of a horse race, then, to the  
4 Federal Circuit and the PTO.

5 It also depends on whether Oracle would appeal --  
6 which I presume they would -- through the PTO process.

7 **THE COURT:** Thank you.

8 Let me hear from Mr. Jacobs. My main question to you  
9 is, what do you say to all this, and why did you even get into  
10 what happened in the PTO if invalidity is not even asserted  
11 here?

12 **MR. JACOBS:** Let me back up. We have an in limine  
13 ruling from Your Honor. The general rule is that as to patents  
14 in the state of the '104, that is kind of in between initiation  
15 of re-exam and a final rejection, the parties will not refer to  
16 the status of those -- of that reexamination because it's  
17 interim. That was the logic of the Court's in limine ruling.

18 The jury had just heard in the video about the role  
19 of the jury in assessing validity. Probably a good 30 percent,  
20 20 percent of the patent video goes to validity. It was  
21 important, I felt, to explain to the jury, as I did, that the  
22 only defense Google has is non-infringement.

23 The polar extreme of what I could have said, but felt  
24 in conversation -- didn't even propose to say to Mr. Van Nest,  
25 and felt it would be inconsistent with a separate stipulation

1 and order we have about not referring to the dropped patents --  
2 so let me back up.

3 We have a stipulation and order that Google will not  
4 refer to the fact that there were patents originally asserted  
5 that are not now in the lawsuit.

6 I felt that the mirror of that would have been to say  
7 Google had asserted invalidity and has now dropped its  
8 invalidity defenses.

9 So I didn't intend to tell the jury that there had  
10 been this prior litigation history. I did feel it was  
11 important to tell them that when they look at the patents they  
12 are going to see that there is this history on them. And  
13 they're going to need to know what a reissue is or what a  
14 reexamination certificate is.

15 So we sent, over back and forth on the slides. I  
16 ended up with the slides that you saw, in which I explained,  
17 number one, as Mr. Van Nest said I could say, these patents had  
18 been thoroughly examined in the Patent Office.

19 And then I highlighted for them exactly what they  
20 will see on the front page of each of the patents-in-suit, and  
21 that there is a reissue and a reexamination certificate.

22 I then said, consistent with our discussion, the only  
23 defense you will hear in this lawsuit is non-infringement.

24 Mr. Van Nest had asked me not to say, there is no  
25 invalidity defense in this lawsuit. I think that would have

1 been okay, but it wasn't worth quarreling over.

2 So, I did not say to the jury, there is no invalidity  
3 defense. What I said is, the only defense is non-infringement.  
4 And, again, we had specifically discussed that.

5 So I think Mr. Van Nest isn't asking for anything  
6 specific at this time. He and I will talk before closings  
7 about this. And if we have an issue about how to refer to the  
8 prior history of the patents, we'll bring it to Your Honor's  
9 attention. I think that should address this issue thoroughly.

10 I don't think I did anything inconsistent with our  
11 understanding.

12 **THE COURT:** Mr. Van Nest, the document, the patent  
13 itself issued by the PTO, will go into the jury room. And it  
14 has all that information about the prior examinations right on  
15 the face. So -- right? Isn't that part correct?

16 **MR. VAN NEST:** That part's correct, Your Honor. But  
17 they -- they're not going to pay much attention to it if no one  
18 calls it out to them.

19 And what I'm objecting to is, after I expressly  
20 objected to the slide twice and made very clear that I thought  
21 it was not fair to be talking about how many times this thing  
22 has been examined, that then he got up and did it, and I  
23 didn't -- you know, I didn't have anything to say.

24 **THE COURT:** What difference does it make if it's been  
25 examined a hundred times? So what? Invalidity is not at issue

1 here.

2           **MR. VAN NEST:** It's -- it's just a situation that if  
3 he's going to get a witness up there that's going to talk about  
4 it went through once and then it went through twice and then it  
5 went through the third time, I mean, this gives extra weight to  
6 the patent.

7           It's not fair in a trial where Your Honor has said  
8 that I can't talk about the current re-exam of the same patent  
9 in the Patent Office, where the PTO says this thing just isn't  
10 valid.

11           **THE COURT:** Why did you drop your invalidity  
12 challenge if it's such a bogus patent? If the PTO and the  
13 examiner has already found that, why didn't you bring it up  
14 here?

15           **MR. VAN NEST:** I felt, listening to everything we  
16 had, we had a very strong non-infringement case on the '104,  
17 and I didn't feel as though I needed both.

18           And your Honor has been stressing streamlining this  
19 thing. So if you want me to put it back in, I might  
20 reconsider. I have been listening to you.

21           **THE COURT:** You lawyers are great. You're always  
22 able to blame the judge for something.

23           (Laughter)

24           **MR. VAN NEST:** If we can.

25           **THE COURT:** It's my fault.

1           **MR. VAN NEST:** In any event, if Mr. Jacobs is  
2 saying -- which he may be -- that that's it, we're not going to  
3 hear a lot of testimony about this, I'm fine. And then we'll  
4 deal with it prior to closing. But I do think it was not  
5 consistent with our agreement, and not fair in light of the  
6 rules Your Honor has set forth.

7           I can't get up there and say, hey, they started with  
8 seven patents and now they've only got two. Right? That's out  
9 of bounds. And I can't say, hey, they had 25 claims and now  
10 they've got six. I'm not going to say that either.

11           We're trying to litigate the claims we've got and the  
12 defenses we have, and we shouldn't be referring to things  
13 outside of that, especially on a patent that we all know in  
14 this courtroom has been declared invalid by the PTO. That's  
15 the point.

16           **THE COURT:** Maybe one reason you dropped it is  
17 because you think you're going to win in the PTO, and you might  
18 not be able to convince the jury given the presumptions of  
19 clear and convincing. And that would be a very reasonable  
20 approach to take. But you did, on your own, decide not to  
21 assert invalidity.

22           And Mr. Jacobs has a point. The video did get into  
23 the issue of invalidity. And it was reasonable for him to  
24 explain that the video -- ten minutes of the video or five  
25 minutes of the video is irrelevant; that the jury is not going



1 to be asked to invalidate the patent.

2 So I think you lawyers are making more of this than  
3 deserves to be made out of it. You talk about it. Right now  
4 I'm having trouble seeing what the point is, why you have  
5 heartburn over this.

6 **MR. VAN NEST:** The point -- I'm not complaining about  
7 his saying that -- that my only defense is non-infringement,  
8 because that's a pretty good defense. I'm not sure the jurors  
9 even understood that comment.

10 What I'm complaining about is touting the fact that  
11 the patent has been through the PTO three times, when we all  
12 know it's still in the PTO and stands rejected. That's the  
13 thing I'm complaining --

14 **THE COURT:** But is the reason -- what you're leaving  
15 out, is it you're afraid that they will argue that this is like  
16 a pioneering patent --

17 **MR. VAN NEST:** Right. That's right.

18 **THE COURT:** -- therefore, it was such a high-profile  
19 patent that, obviously, the people at Google, including  
20 Mr. Lindholm, knew good and well all about this patent because  
21 it was such a high-profile thing and, therefore, willfulness?

22 **MR. VAN NEST:** No, no, no.

23 **THE COURT:** Is that what you're --

24 **MR. VAN NEST:** No, no, no. It's the first part of  
25 Your Honor's sentence. It's that they are going to argue that

1 because it's been through the PTO three times, it's just a  
2 super-duper patent, and pioneering in nature, and, therefore,  
3 deserves a lot of extra weight, when we all know that's not  
4 true because the fourth time through the PTO said, no, this  
5 isn't valid --

6 **THE COURT:** All right.

7 **MR. VAN NEST:** That's the point.

8 **THE COURT:** Mr. Jacobs, are you going to make that  
9 argument?

10 **MR. JACOBS:** I might now because it's been suggested.  
11 But I don't think so, Your Honor.

12 I think we have a very straightforward case. I gave  
13 no indication in my opening. I did not use words like  
14 "pioneering." I did not use words like "very broad  
15 protection."

16 We've got the claims. This is a tempest in a teapot.  
17 I do want to make just two things clear. Number one, one of  
18 the rejections is an obviousness rejection, not an anticipation  
19 rejection. And it is a very preliminary result in the Patent  
20 Office.

21 And you saw with one of the patents that we asked to  
22 include in this trial that the PTO can go either way on these  
23 preliminary rejections, because we got one turned around and we  
24 got an allowance on one of those patents just a week ago.

25 The other just factual error, it is true that in an

1 original slide I said it's been examined three times. But all  
2 I did in front of the jury is refer to what's on the front  
3 piece of this patent. And on the front piece you can't see the  
4 other reissue. That's only embedded in the file history.

5 And I simply recounted what has happened on the '104,  
6 that you can see from the front of the patent. And that's one  
7 initial grant of the '685 Patent, that's going to be relevant  
8 to the Lindholm testimony, and then the reissue of the '104.

9 **THE COURT:** This does not require any ruling by the  
10 judge. I will say this much as a heads up and caveat: There  
11 is a order in limine that says you cannot get into the current  
12 status of the incomplete reexamination.

13 Now, I have learned in presiding over trials that  
14 sometimes lawyers will win a motion in limine and keep some  
15 evidence out, and then they will make arguments that presuppose  
16 the other side will not be able to use the very piece of  
17 evidence excluded, and leave a false impression with the jury.

18 I'm not saying that Mr. Jacobs would do that here,  
19 but if -- if it gets to the point where a damages argument is  
20 being made or a high-profile argument is being made, and the  
21 argument is basically along the lines of this is the greatest  
22 thing since sliced bread and, of course, they knew about it,  
23 and knew they needed a license for this thing because it went  
24 through the PTO three times and got approved, I will reconsider  
25 the order in limine and perhaps allow Mr. Van Nest to say, And,

1 by the way, it's now in re-exam again and it's been rejected.

2 Now, so far we aren't there. So far the record is  
3 fine and Mr. Jacobs, in my judgment, has not opened any doors.  
4 But be aware that you could open that door depending on where  
5 you go with this. And if -- if it gets to the point where  
6 justice requires that that door be opened, we'll just undo the  
7 order in limine.

8 And I could give you so many examples of how this has  
9 happened. Let's take an example outside this context. In a  
10 1983 case, the police succeeded in getting a ruling that they  
11 only had to produce documents going back five years. And then  
12 when they argued to the jury in the closing argument, they  
13 said, this officer has been an officer for 25 years and there's  
14 zero proof that he ever did anything wrong. He's got a clean  
15 record for 25 years.

16 Well, the only reason he had a clean record was  
17 because they only had to produce documents going back five  
18 years, in order to save money. And then they used that as a  
19 springboard to argue that he had a spotless record for 25  
20 years.

21 So you can't do that. You can't take advantage of  
22 rulings like that in order to leave a incorrect impression with  
23 the jury.

24 Now, again, we're not there. Nothing that, in my  
25 judgment, Mr. Jacobs said yesterday gets close to opening the

1 door. But if it goes down the path that I indicated, perhaps  
2 it would. So be careful as we proceed.

3 That's all I'm going to say on that point now.

4 Any other way I can help you?

5 **MR. JACOBS:** Nothing from us, Your Honor.

6 **MR. VAN NEST:** Nothing from us, Your Honor.

7 **THE COURT:** Are you ready to go with your opening  
8 statement?

9 **MR. VAN NEST:** Sure am.

10 **THE COURT:** Can we see if the jury is present and  
11 ready to go.

12 Does Oracle have its first witness to go out in the  
13 hallway someplace?

14 **MR. NORTON:** Our first witness is Mr. Lindholm. I  
15 think Google has agreed to him this morning.

16 **THE COURT:** He should be ready to go, without having  
17 to take another break. We will go straight to the first  
18 witness.

19 **MR. VAN NEST:** He is here, Your Honor. Mr. Lindholm  
20 is here.

21 **THE COURT:** All right. Good.

22 I'm going to need to have about a minute before we  
23 launch into the openings, just to get them oriented again. So  
24 you're free to stand there as you wish, but --

25 **MR. VAN NEST:** I'll back off.

1           **THE COURT:** Someone has a machine going.

2           I read in -- one of the news stories quoted me as  
3 saying "mashing of teeth." No. It was a Biblical reference to  
4 gnashing of teeth. G-n-a-s-h.

5           Those of you who have studied your Old Testament will  
6 remember the reverences. Basically means consternation.  
7 Gnashing of teeth.

8           (Jury enters at 7:59 a.m.)

9           **THE COURT:** Okay. Welcome back. Good to see you all  
10 again this morning. Please, be seated.

11           So did we give you the new notepads? You've got new  
12 notepads? Everybody good?

13           (Jurors nod.)

14           **THE COURT:** All right. We're going to get right into  
15 the continuation of the opening statements. And I want to give  
16 you just a reminder about the way the patent part of this  
17 works.

18           So I don't know if you can see this far, but I'm  
19 holding up one of these color-coded things. This is '520,  
20 Claim 1.

21           So these claims show up at the end of the patent.  
22 And it's the claims that lay out the exact thing that has been  
23 allowed as the patented invention.

24           So the way these are structured is, it makes a  
25 description. And each one of these little paragraphs is called

1 a limitation. And this one it looks like there's five  
2 limitations.

3 So in order to infringe, the plaintiff has to prove  
4 each one of these limitations is present in the accused thing.  
5 So there's always an accused thing. This is a method patent,  
6 so it would be an accused method.

7 So the plaintiff has got to prove, that limitation,  
8 this one, this one, this one, and this one, are all resident or  
9 present in the accused method.

10 If four of the five are present, there's no such  
11 thing as close. It's either yes or no. Four out of five, not  
12 good enough. Five out of five, always good enough.

13 And it's your job to figure out if all of these have  
14 been proven.

15 Now, in this particular example, this color-coded  
16 thing makes it much easier for you because you can see there's  
17 only one limitation that's in dispute. And Google concedes the  
18 other four. Four out of five, though, is not good enough.

19 So what we're fighting over here is the underlined  
20 one, with red underlining. It starts off "simulating execution  
21 of the bytecodes" and so forth.

22 That one is the one that's in dispute and in play.  
23 And you're going to have to make a decision whether or not the  
24 plaintiff proves it or not in the course of this trial.

25 Now, you'll be hearing some testimony about these

1 other limitations because you're going to need to know the  
2 background of how these things work. And to place it in  
3 context, you'll have to hear something about it. But most of  
4 what you hear is going to be on the underlying thing. Okay.

5 So then you go to a completely different -- this is  
6 odd. Number 18, is 18 asserted? There's nothing underlined on  
7 it.

8 **MR. PAIGE:** No, Your Honor. Claim 20 is asserted.

9 **THE COURT:** All right. So 18 there, it's just --  
10 that's not even asserted. So ignore 18, right?

11 **MR. PETERS:** Your Honor, Marc Peters.

12 **THE COURT:** Oh, yes. Okay. I take it back. No, I  
13 see. All right. Let me explain that part to you.

14 You see the 18? Turn the page to 18. '520, 18.

15 Nothing is underlined, but you'll see in a moment the  
16 one that's asserted is number 20. Everybody see the number 20  
17 is asserted? And there's some underlining there that shows you  
18 that the first limitation is -- is in play. This is odd. My  
19 copy doesn't have -- is there another page to this?

20 **MR. PETERS:** No, Your Honor. Claim 20 is a dependent  
21 claim that depends from Claim 18.

22 **THE COURT:** All right. So that's all there is, is  
23 that little, short piece.

24 **MR. PETERS:** Claim 20 is the text of Claim 18 and  
25 Claim 20 --



1           **THE COURT:** I understand that. Does 20 have a second  
2 page, or is that it?

3           **MR. PETERS:** That's it, Your Honor.

4           **THE COURT:** Okay. So this is easy. You see, what  
5 happens in number 20 is, it incorporates number 18, but adds an  
6 additional step, where it says, "Wherein the simulating step  
7 includes the step of." So that's called a dependent claim.

8           And 18 is the independent claim. So 18 is indirectly  
9 asserted here because number 20 incorporates all of 18, and,  
10 further, specifies that the simulating step, which looks like  
11 the second step in 18, the simulating step includes the step  
12 of, and then there's the underlined red thing. That part is in  
13 dispute. So that's the second example.

14           All right. So what you will be doing at the end is  
15 going through and deciding whether or not each limitation of  
16 the claim asserted has been proven to be resident in the thing  
17 accused. It's almost like a scorecard. You'll just check off  
18 the limitations.

19           But, remember, the ones that have no underlining,  
20 those are conceded to be present. So that makes your work  
21 easier. So all you have to do is focus on the ones that are in  
22 dispute.

23           So this little document that we've handed out to you,  
24 and the lawyers were good enough to prepare, is a handy, very  
25 handy roadmap for you to what the issues are in the case. It

1 doesn't tell you what the answer is, but it is a roadmap to the  
2 issues in the case.

3 Now, yesterday we saw in that video the part about  
4 there are two issues in most -- not most cases, but it can be  
5 two issues. One is infringement. And that's whether or not  
6 these things are present, and the limitations are present. The  
7 other is whether or not the patent is invalid to begin with.

8 Now, for these particular patents, the only issue you  
9 have to decide is infringement or not. Meaning whether these  
10 limitations are present. You will not have to get into any  
11 issues concerning validity or invalidity of the patents.

12 So this is what the issues are for you to decide.  
13 And you've heard one side's opening statement. You're about to  
14 hear the other side's.

15 And I remind you, of course, that nothing the lawyers  
16 ever say is evidence in the case unless it's a stipulation.  
17 However, these opening statements are very important because it  
18 gives you their roadmap to what they think they will or will  
19 not be able to prove.

20 So, now, on behalf of Google, Mr. Van Nest will make  
21 the opening statement.

22 The floor is yours.

23 **MR. VAN NEST:** Thank you, Your Honor.

24 **OPENING STATEMENT**

25 **MR. VAN NEST:** Good morning everyone --

1 (Jurors respond.)

2 **MR. VAN NEST:** -- and welcome back.

3 I want to begin by thanking all of you for your hard  
4 work on Phase One. We really, really do appreciate how hard  
5 you worked.

6 In several respects, Phase Two is going to be  
7 different from Phase One. I expect it will be a lot shorter.  
8 Probably have the evidence to you this week. No celebrity  
9 executives. We're going to be hearing from engineers and from  
10 experts who talk about how the Dalvik machine works.

11 We're not going to be talking about APIs or  
12 copyrights. No rockets. No file cabinet. Here, we're talking  
13 about the Dalvik virtual machine and whether or not it uses any  
14 Sun technology.

15 Now, one other difference is that I have a separate  
16 team helping me on the patent case. And I'd like to introduce  
17 them now. You've probably seen that some of the faces have  
18 changed over here.

19 You remember Ms. Lacavera. Catherine Lacavera from  
20 Google is still our corporate representative. And Renny Hwang  
21 is litigation counsel from Google. He will be with us as he  
22 has been.

23 My colleagues, Matthias Kamber and Gene Paige.

24 **MR. PAIGE:** Good morning.

25 **MR. VAN NEST:** And Scott Weingaertner.

1           **MR. WEINGAERTNER:** Good morning.

2           **MR. VAN NEST:** They are going to be helping handle  
3 the witnesses and evidence in Phase Two.

4           And the key points for Phase Two, really, are these:

5           First of all, the patents you saw yesterday have  
6 nothing to do with smart phones. They were applied for in the  
7 '90s, when Sun was building desktops. They were applied for at  
8 a time before anybody was even thinking about smart phones.  
9 And you'll notice, reading them, they don't make any reference  
10 to smart phones at all.

11           The Android Dalvik virtual machine doesn't use Sun  
12 technology. It was created from scratch by Google engineers,  
13 including Mr. Bornstein and Mr. McFadden and a group of others.

14           In the case of the Dalvik, they weren't using open  
15 source technologies. They actually built it themselves, at  
16 Google, over the course of a couple-year period between 2005  
17 and 2008.

18           Now, as a result, Android and Dalvik are different  
19 from the Sun patents.

20           The Sun patents have some very specific requirements.  
21 Sun didn't invent a virtual machine. Sun didn't invent  
22 resolving references from symbol to numeric. These were very  
23 specific, narrow patents, focused on very specific details that  
24 Google is not using.

25           And that's not a surprise because none of the

1 engineers at Google, who were working on Dalvik, were even  
2 aware that these patents existed.

3           There was nothing, you will find no evidence that any  
4 of the design engineers at Google, or anyone else, was aware of  
5 the '104 Patent or the '520 Patent. The patents were found in  
6 the files. You won't see any e-mails referring to these  
7 patents. There is no evidence any of the engineers discussed  
8 them.

9           Oracle didn't even complain about these until July of  
10 2010, after Android and Dalvik had been on the market for at  
11 least two years. So the Android platform, as you remember from  
12 Phase One, was released initially in November of '07, and then  
13 handsets became available in the fall of '08. And nobody heard  
14 anything from Oracle until July of 2010, after Mr. Ellison had  
15 tried and failed to enter the smart phone market.

16           So the Android design team, whom you'll hear from,  
17 they made choices based on what was best for smart phone and  
18 best on what they thought would work as a new and revolutionary  
19 smart phone platform.

20           So let's talk about key points. I'll put my slide  
21 up.

22           First key point is that Google made fundamentally  
23 different design choices for Android. These patents had no  
24 relevance to what the designers were doing. They were created,  
25 as I said, back in the '90s, before smart phones ever existed.

1 Google independently developed Android. There is  
2 going to be no testimony that anybody sat down and looked at  
3 these patents and copied, or anything like that. They were  
4 developed at Android -- at Google, by the Dalvik team. And  
5 you'll hear from them.

6 And, third, we're going to get into a detailed  
7 analysis of the very specific requirements of these patents.  
8 They have some very specific requirements that Google's  
9 products simply do not meet.

10 So let's put a little context around this, and what  
11 are we talking about within the Android system?

12 You remember the stack? Here's the full stack. This  
13 is the Android platform. We're not going to be talking about  
14 core libraries any more, or APIs. We're talking about  
15 something called the Dalvik virtual machine.

16 Now, the virtual machine isn't actually a machine.  
17 That's just a name that it's given. It's software. It's code.

18 So when we analyze Dalvik, we look at the code. And  
19 I agree with one thing Mr. Jacobs said yesterday: it is all  
20 about the code. It's not about a bunch of e-mails.

21 You're going to see a string of e-mails, again, from  
22 Oracle, but we'll prove to you that the code, which is what  
23 makes up Dalvik, is different from the code and the inventions  
24 in these two patents.

25 So Dalvik is not a machine. It's software. It's

1 made of code. And, by the way, Dalvik is not a secret code  
2 word for some new high-tech thing. It's a town in Iceland.  
3 And Mr. Bornstein came up with that. He was reading a book  
4 about Iceland. And Dalvik is the town in Iceland and, hence,  
5 we have the name Dalvik.

6 Now, Dalvik is a new thing. Dalvik was created in  
7 2006 and 2007.

8 If we could have our next slide.

9 The patents didn't exist until the late '90s. The  
10 '520 was applied for in '98. And the '104 was applied for in  
11 '99. So, again, these are almost ten years before Android was  
12 developed and before Dalvik was developed.

13 That's a lifetime in technology. We think back to  
14 what was in the '90s, the state of our cell phones and  
15 technology, very, very different from what we all enjoy today.

16 Now, you've heard something about the Dalvik in Phase  
17 One. And there's quite a bit of discussion about Dalvik, as  
18 you might imagine, at Oracle.

19 This is something that Mr. Kurian said during my  
20 examination. We asked him about the Java virtual machine:

21 That's different from Dalvik's virtual machine. At  
22 least that's what you told Mr. Rubin?

23 That's correct. The Java virtual machine, that's the  
24 version that Sun uses. And the Dalvik virtual machine is what  
25 Android uses.

1           Now, neither company invented virtual machines.  
2 They've been around for a long, long time. So we're talking  
3 about different types of virtual machines.

4           Next slide.

5           This next e-mail is actually a blog post by an Oracle  
6 engineer, Mr. Wong, whom you will hear from in Phase Two was  
7 one of the engineers at Oracle involved in analyzing Sun's  
8 patents.

9           And he made a comment, just in January: For the  
10 commentator who thinks Android is based on Java, you are  
11 incorrect. What is true is that the programming language for  
12 Android is the Java programming language.

13           We all know that now.

14           The Android platform itself uses the Dalvik virtual  
15 machine and processes Dalvik bytecode, not Java bytecode. So  
16 the Android platform is not based specifically on Java ME  
17 technology.

18           I couldn't have said that better myself.

19           Next slide.

20           Mr. Poore is another consulting engineer at Oracle.  
21 You'll hear from him. He concedes that the architecture of  
22 these two virtual machines is quite different.

23           There's an architectural difference between the Java  
24 virtual machine and the Dalvik virtual machines. There's a  
25 difference in approach, yes.



1           Would the bytecode for a stack-based virtual machine,  
2 a stack-based machine -- that's what Sun uses, that's the Java  
3 virtual machine -- would that work on a register-based virtual  
4 machine? No. Register-based virtual machine, that's what  
5 Android uses. That's Dalvik.

6           And, lastly, we're going to hear again from  
7 Dr. Mitchell. He's their expert. He was their expert in Phase  
8 One. They are bringing him back in Phase Two.

9           And we asked, what about the question of bytecode  
10 format? The process of taking source code -- that's that  
11 implementing code -- and producing something that runs on Java  
12 and producing something that runs on Android is quite  
13 different.

14           So Oracle engineers, including their expert, concede  
15 from the start there are many, many differences between Java  
16 virtual machines and the Dalvik virtual machine, which is the  
17 issue in our lawsuit.

18           So I want to step back and provide just a little bit  
19 of background on computer programming, code and compiling, and  
20 virtual machine, so we can put a little of this in context for  
21 us in Phase Two.

22           In Phase Two, we're going to be talking about what  
23 happens after the programming is done. And we're going to take  
24 the source code that you saw written by people like  
25 Dr. Astrachan and Josh Bloch, and turn it into bytecode,

1 machine code that a machine can read. That's what we're  
2 talking about here in Phase Two.

3 Next slide, please.

4 All right. We have our developer we saw in Phase  
5 One. She works for Amazon. She is going to write an  
6 application you can use on your phone. She writes that  
7 application in the Java Programming Language. And then she has  
8 to turn it into something that the computer can read, because  
9 the computer can't read the source code. The computer reads 1s  
10 and 0s.

11 So one way of doing that is shown on the screen. You  
12 might compile each set of source code separately for each  
13 machine. You might have one set of object code for a Mac,  
14 another set for Windows, or another set for a Linux-based  
15 machine.

16 That's separate compiling. That has advantages. It  
17 has disadvantages.

18 Another way of doing it is what we're talking about  
19 here. You could also take the source code and turn it into  
20 what we've all been calling bytecode. And that bytecode can  
21 run on any machine if the machine has a virtual machine, some  
22 software that can interpret the bytecode.

23 It can interpret it for a Mac. It can interpret it  
24 for Windows. It can interpret it for Linux. That virtual  
25 machine interprets the bytecode and, therefore, it can run on

1 any different machine.

2 Now, virtual machines have been around a long, long  
3 time. Invented back in the 1960s. You can see examples here  
4 on the slide. There are many.

5 Sun didn't invent the virtual machine. Google didn't  
6 invent the virtual machine.

7 What we're talking about in this case are patents  
8 with details, very specific details, very specific requirements  
9 within a virtual machine. Not the virtual machine itself.

10 Now, there are two patents, and so two different  
11 things are accused in Phase Two. And I'm going to use our  
12 Android platform to illustrate those.

13 Remember that the Android platform is made available,  
14 open and free to developers, folks that write applications.

15 And they use a tool called the dx tool. Once they've  
16 written their program, they have to turn it into bytecode. And  
17 they use a tool called the dx tool to do that.

18 So the '520 patent, the patent about arrays and  
19 simulating executions, that has to do with what developers are  
20 using, the dx tool, before it even gets on your handset.

21 The '104 Patent has to do with the details inside the  
22 virtual machine. The virtual machine, the Dalvik, is placed by  
23 the handset makers on the handsets. And so the '104 Patent,  
24 that has to do with what's happening once the code gets on your  
25 handset and you're running it.

1           So what's this dx tool? My next slide gives you an  
2 illustration of that. My developer, she has written her  
3 program, and she has her source code, and now she wants to make  
4 it available in the Android store or the Apple store or  
5 whatever store she wants to make it available in. She's  
6 written it in Java, so she has to use a Java compiler to turn  
7 it into bytecode.

8           Now, there was some innuendo yesterday that there's  
9 something wrong with that. No, no, no. Java Language is free.  
10 Java compiler is free. Anybody can use a Java compiler. And  
11 they are not accusing Google or anyone else of anything with  
12 respect to a Java compiler.

13           Lots of companies make Java compilers. IBM makes  
14 one. GNU makes one. And they are all made available to people  
15 to use to compile code in the free Java Language, to use as  
16 Java bytecode.

17           So in Android there's another step, because Android  
18 doesn't run Java bytecode. It's different. It runs Dalvik  
19 code. So there's a dx tool. The dx tool takes the bytecode  
20 and turns it into what we call a dex file, d-e-x, Dalvik  
21 executable. That's the Dalvik bytecode that runs on the Dalvik  
22 virtual machine on the Android platform.

23           Now, how does this relate to what we might experience  
24 using our phones, for those of us that have them?

25           Here's an example of a smart phone in Android. And

1 it's opened up to the Android store. We're going to choose an  
2 application that we're going to download onto our smart phone.

3 So we're going to choose our Amazon application that  
4 the Amazon folks wrote. We push the button.

5 The bytecode has already been created. It's already  
6 in the store. It comes wirelessly onto your phone through  
7 something called the dexopt -- which you'll hear more about --  
8 and it goes into memory. And it sits in Dalvik in the memory.

9 You know that you can use that application  
10 immediately. Or you can wait a day, or you can wait a week, or  
11 you can wait a month. But the application is on your phone.  
12 The bytecode is there. It's in your memory. And all you have  
13 to do is call it up and push it, to run it. Which is what  
14 we'll do next.

15 I now have the application on my phone. I call my  
16 application page. I push the Amazon button, and up comes the  
17 dex code. It runs through the Dalvik virtual machine, which  
18 interprets it so my processor, again on my phone, can run it.  
19 And that means I can use it. It appears on my screen and there  
20 we go, I have my application.

21 So what we're talking about here in Phase Two are the  
22 details of how these things happen.

23 Next slide.

24 Now, as Judge Alsup has mentioned a couple of  
25 times -- and I'll just put a fine point on it -- your job in

1 Phase Two is to compare the claims of each of these patents to  
2 the accused features within the Dalvik virtual machine or the  
3 dx tool. That's the job, is to compare. And, as he has said a  
4 couple of times, three out of four is not good enough. Four  
5 out of five is not good enough.

6 The example I have is a soccer ball. If I had a  
7 patent on a ball for playing sports, I might have these  
8 limitations: It might require it's made of leather, stitched  
9 together, filled with air, and spherical. That would be my  
10 patent. I've got the invention on the soccer ball.

11 If someone came along with a football and I accused  
12 them of infringement, I would have to prove all four elements.  
13 So here I would say: Made of leather? Yeah. Stitched  
14 together? Yeah. Filled with air? Yeah. Spherical? No, not  
15 spherical. A football is football shaped.

16 So, there's no infringement. Why? Because, as  
17 Judge Alsup has said a couple of times, all elements must be  
18 present. It's called literal infringement. All elements must  
19 be present in the accused device.

20 Now, you're going to find in both the case of the  
21 '104 and the '520, all elements are not present. Not by a long  
22 shot.

23 I want to start talking now in a little more detail  
24 about these two patents.

25 So, the first question you ask yourself is, what are

1 the requirements of the patent? Because that's what you have  
2 to apply.

3 And the requirements of this patent are very  
4 specific. This patent was applied for in '99. James Gosling  
5 is the inventor. And, again, applied for almost ten years  
6 before Android was created.

7 This patent deals with the following thing: It deals  
8 with the way in which instructions in the program are made to  
9 work. How do the command instructions work?

10 Now, on the left here you have an instruction  
11 sequence. This is a figure from the patent. And you see it  
12 says "prior art" because that means nothing here is new. So my  
13 instructions mean: What are the commands I'm going to give the  
14 computer?

15 The example they give here is "load." A computer  
16 command might be load, might be git, might be read. Could be a  
17 lot of things. We're talking about load. And what are we  
18 loading? We're loading data. In this example, the data is  
19 represented by "y."

20 Now, data in your computer, even in your smart phone,  
21 is stored usually in tables. Memory tables like the one on the  
22 right. That's a data object table. And that table has a bunch  
23 of mailboxes.

24 Those are like addresses, just like the mailboxes we  
25 all use. So there would be slot 1, slot 2, slot 3, slot 4. So

1 we have addresses in the data and we have command instructions  
2 in the instructions themselves.

3 Now, the key here is, we're distinguishing between a  
4 symbolic reference for the data or a numeric reference for the  
5 address. In this example, the data on the right is 17. And  
6 we're representing it by the symbolic reference "y."

7 Symbolic references are names or symbols that are  
8 anything other than the memory location of where the data is  
9 located.

10 We actually have a definition of this that  
11 Judge Alsup has provided. This is the definition that you will  
12 be applying for symbolic reference:

13 "A reference that identifies data by a name  
14 other than the numeric memory location of  
15 it."

16 So when we're talking about representing data, we  
17 have two choices. Either a name or a symbol, or a location of  
18 where the data is located.

19 I have an example to illustrate that.

20 We all know that there's a residence where the  
21 President of the United States resides. We all know that. The  
22 symbolic reference for that is The White House. That's the  
23 name that we give it. The numeric reference for it is 1600  
24 Pennsylvania Avenue. That's the address of it.

25 So I could tell somebody, go to The White House. I



1 would be representing that residence through a symbol, the  
2 name. Or I could say, go to 1600 Pennsylvania Avenue and see  
3 what's there. That's the address.

4 And that is the numeric reference in the patent. And  
5 we have an example from the patent itself that shows that.

6 Again, numeric references are old. Symbolic  
7 references are old. There's nothing new about that.

8 This is a figure from the patent. And notice the  
9 numeric reference example here is 2.

10 Now, 2 doesn't actually represent the data, which is  
11 17. What does it represent? It represents slot 2 in my data  
12 object table. It's an address. It's a location. So it's a  
13 memory location, not a symbolic reference.

14 And the next slide shows that -- the distinction  
15 between these. Again, these are both figures in the patent. A  
16 symbolic reference is a name or a symbol. You see that on the  
17 left, the "y." And a numeric reference is a memory address.

18 Slot 2, anything could be in slot 2. Could be 17.  
19 Could be 24. Could be 30. You are not told what's in there.  
20 You're just told, go to slot 2 and perform an operation on  
21 whatever is there.

22 Now, the patent talks about converting symbolic  
23 references in the instructions to numeric references. And I  
24 think we have a little animation. Here's our symbolic  
25 reference. It's the Y. And notice where it is. It's in the

1 instruction itself. And that's going to be converted to a  
2 numeric memory address 2, slot 2 in the data.

3 That's all this patent is about. But it's critical  
4 to see a requirement you heard absolutely nothing about  
5 yesterday. And it's a critical requirement of the patent.

6 The symbolic reference has to be in the instructions  
7 itself, because computers use symbolic references all over the  
8 place. But this patent requires that the symbolic reference be  
9 in the instruction to begin with, as you see that it is here.

10 Let's go to the next slide. This is from your  
11 handout, the one that Judge Alsup passed out. Here is Claim  
12 11. And it's representative of the claims in the '104.

13 Notice what's underlined. We haven't underlined  
14 "memory" because every computer has a memory.

15 "Containing intermediate form object code," that's  
16 bytecode. Any virtual machine uses bytecode.

17 "Constituted by a set of instructions." Any system  
18 uses instructions. That's why there's no dispute about these.

19 "But certain of the instructions containing one or  
20 more symbolic references." The instructions have to contain  
21 the symbolic reference. It has to be in the instruction. The  
22 same is true for the next limitation.

23 "A processor" -- every system has a processor --  
24 "configured to execute said instructions containing one or more  
25 symbolic references." And there's no dispute that that's a

1 requirement of the patent.

2 Dr. Mitchell conceded it in his deposition. This is  
3 what we asked him:

4 "Do you disagree that instructions, the  
5 instruction sequence, has to contain symbolic  
6 references in order to meet the claims of the  
7 patent?

8 "I think that's literally what the claim  
9 language says. So claim language must be  
10 met."

11 So, again, you are going to see e-mail after e-mail  
12 and statement after statement about symbolic references. But  
13 you should always be asking yourself, where is it? Are they  
14 talking about something that's just in the data, or is it in  
15 the instructions?

16 Why is that important? That's important because in  
17 Android, Android doesn't use symbolic references in the  
18 instructions. And that's why Android is different and doesn't  
19 meet the requirements of the '104 Patent at all.

20 Next slide.

21 This is a diagram that will be presented by Andy  
22 McFadden, one of the Google design engineers. And it shows how  
23 the instructions and the data work inside the Dalvik machine.

24 So look at the left, the blue instructions. That's  
25 where the instructions are. You'll see a number there, "01."

1           And that's what Android uses in its instructions,  
2 numbers. And that number doesn't represent data. It just  
3 represents slot 1 in the field I.D. table.

4           You see the yellow arrow moving from the 1 to the 1  
5 in the field I.D. table. That's a numeric reference. It's not  
6 a symbolic reference. It's an address.

7           And in the field I.D. table, you'll see the  
8 information stored there is a 2. We've highlighted the 2.  
9 That 2 is also a numeric reference. That points to position 2  
10 in a string table. Not any particular data. There could be  
11 anything at position 2.

12           And at position 2 there's another numeric reference  
13 of 3. And that's not a reference to data. That's a reference  
14 to a location in string data.

15           Now, I want to stress something important. Dalvik  
16 does use symbolic references, and those symbolic references are  
17 sometimes converted to numeric references.

18           But the symbolic references are not in the  
19 instructions. And that's an absolute requirement of the '104.  
20 So don't be confused by e-mails and suggestions that, oh, they  
21 are symbolic references.

22           We concede the use of symbolic references and numeric  
23 references in Dalvik. Many systems use those.

24           This patent requires that the symbolic reference be  
25 in the instruction. And in Dalvik that never happens.

1           Here's another example. I've cut the chart a little  
2 bit short. You'll hear reference to something called an index.  
3 An index is a numeric reference. An index is simply a --  
4 indicates where to look in another table. It's an index to  
5 another table.

6           So that "01" in the instructions is an index to a  
7 location in the field I.D. table. That's why we have the arrow  
8 going from 1 to 1.

9           That is 1600 Pennsylvania Avenue.

10          Now, if we put Y in there, or put something that  
11 represents data, that would be different.

12          Notice on the far right the word "fun." The word  
13 "fun" isn't even the data you are looking for. That is a  
14 symbolic reference. That is the kind of symbolic reference  
15 that Android uses, but notice where it is. It's in the data,  
16 not in the instructions.

17          The Android designers felt as though they would be  
18 better off using numeric references, memory locations in their  
19 instructions; that it would work better and be faster to do it  
20 that way than to use symbolic references there.

21          And Dr. Mitchell admitted in his opening report that  
22 Android uses numeric references in its instructions, not  
23 symbolic. He admitted it.

24          Now he's doing a 180. Now he submitted another  
25 report, a reply report, where he then takes the same indexes,

1 the same indexes that he said were numeric references, and  
2 flips it around and says, oh, no, no, no, I got that wrong;  
3 they are actually symbolic references.

4 So let's look at our next slide. So there is the  
5 requirement in the '104 that the references be in the  
6 instruction. And that requirement is not met.

7 Now, there's a second requirement of the '104 that I  
8 won't spend any time on now, but you'll hear about it. And  
9 that is that these references be resolved dynamically, not  
10 statically.

11 That's something that talks about how you change the  
12 symbolic reference to the numeric reference. You'll hear more  
13 about that from the engineers.

14 That's a second requirement of symbolic references  
15 that is also not met. But we're showing these because I think  
16 you'll hear, probably, more testimony about this particular  
17 point.

18 So that's the '104. Symbolic references are not in  
19 the instruction. Android uses numeric references.

20 Now, the '520, I'll say right upfront, is a patent  
21 that deals with a situation that doesn't come up much. This is  
22 the patent that deals with arrays.

23 And we've had Android analyzed. The number of times  
24 that you have to actually deal with an array is really small.  
25 Something like one-tenth of 1 percent of the time when you're

1 running an average Android program.

2           So this patent will necessarily get less time and  
3 attention during the trial because it doesn't relate to -- to a  
4 situation that even comes up much.

5           So this, again, is an old patent, applied for in '98.  
6 And I'll say right upfront, this one is a little bit harder to  
7 understand because it's talking about an abstract concept  
8 called "simulated execution."

9           Let's walk through and see if we can break this down  
10 a little bit.

11           So when you write in the Java Language and write in  
12 any language, programs use data. They use data. Numbers,  
13 variables and so on.

14           And sometimes that data is organized in an array. An  
15 array is just like a list. It's a list or a collection.

16           I'm showing one on the screen here. The array here  
17 is the group of numbers, 1, 2, 3, 4. That's our array. And  
18 the system has to identify those when you -- when you take your  
19 source code, like my programmer wrote, and you're going to  
20 compile that into bytecode using the dx tool, you've got to  
21 take these arrays into account. That's called initializing the  
22 arrays.

23           Let's look at the next slide.

24           The Java compiler does sort of a bulky job of doing  
25 that. When the Java compiler takes the source code and

1 compiles it, doing the arrays is difficult.

2           You see here this pattern, which is called duplicate,  
3 iconstant 1. That means integer constant 1. Integer constant  
4 2. Integer array store. Those are all instructions. That has  
5 to happen for every value in the array.

6           So I could have an array with 30, 40 values in it.  
7 The example I gave you had four, so that was pretty small.  
8 They can be big. And you have to run through this every time,  
9 so it's pretty messy.

10           The '520 Patent deals with a way, one particular way,  
11 of initializing those -- identifying those numbers and putting  
12 them into an instruction.

13           But the '520 is just one way of doing that. There  
14 are lots of different ways to do it. And Android, as you can  
15 imagine, chose a different way.

16           What's the way that the '520 requires? It's called  
17 simulating execution. This is what Judge Alsup showed you a  
18 few minutes ago. That's Claim 1, one of the claims asserted.

19           So we're talking about getting the bytes in the  
20 bytecode and analyzing those. Simulating execution of the  
21 bytecodes of the clinit -- that means class initialization  
22 method -- against a memory, without executing the bytecodes to  
23 identify them.

24           So we're talking about something called play  
25 execution. The way I think of this is, it's a dry run. It's a



1 dry run. It's simulated execution so that you simulate what  
2 would happen if I ran off 50 numbers, and you create an  
3 instruction based on simulating the execution of the bytecode.

4 So to illustrate this, we're going to do a couple of  
5 things. So here's our array. That's in the code that my  
6 programmer has written. She puts that through the Java  
7 compiler to turn it into bytecode.

8 And then, according to the '520, if you simulate the  
9 execution of this array, you can pre-load a very simple  
10 instruction like the one that appears next here on the screen.  
11 That's how the '520 does it.

12 Now, I'm going to show a short animation that  
13 animates this because in the '520, when you simulate the  
14 execution, you actually have to use the memory to do that. The  
15 memory in a virtual machine is called the stack, because it's a  
16 stack-based device. A stack. This feature in '520 uses the  
17 stack to run through the array.

18 You can see here, here's some of the code that's in  
19 the patent, explaining on the right we're going to create a  
20 stack for play execution. And we'll start with an empty stack,  
21 and then we're going to actually push the numbers through the  
22 stack into our preloaded instruction.

23 Let's see how that works.

24 Here's my bytecode on the left. I'm now going to  
25 bring up the stack, which is part of the memory, and the system

1 is going to simulate the execution. A dry run.

2           What would happen if we actually ran this bytecode  
3 with all these values? They go through the stack. They get  
4 analyzed in the stack. And they get placed into the array,  
5 which is a preloaded instruction.

6           That makes it -- that makes it easier to run with  
7 less memory. You can see all of these going through the stack  
8 and down to the array.

9           Now, notice this particular operation happens before  
10 the code ever gets on your phone. This is something the  
11 developer uses after she has written the source code.

12           So speed is not really an issue. Speed is not an  
13 issue at all with the '520. With the '520, the only issue is  
14 can we make this array smaller so it doesn't take up so much  
15 memory? Speed is not a factor, whatsoever, for this.

16           Now, Android doesn't use simulated execution. They  
17 don't use simulated execution. The Android developers were not  
18 aware of this patent. I'm not sure they're even aware of that  
19 technique.

20           What Android uses is something different, called  
21 pattern matching. Pattern matching doesn't use the stack.  
22 Pattern matching you can think of as analyzing whether or not  
23 there's a pattern. And if there is a pattern, put that pattern  
24 into the array.

25           This is actually from the code, comments from the

1 source code in Android. It says, try to match the array  
2 initialization idiom. "Idiom" in computer language, for  
3 computer science people, means pattern. We are expecting the  
4 following pattern repeatedly.

5           So in Android they set up ahead of time: here's the  
6 pattern we are going to expect if we have an array.

7           Now, notice, that's the pattern they have identified.  
8 That's actually right from the source code. Dup, push index,  
9 push value, \*astore. That means star array store. That's the  
10 pattern.

11           And that pattern is used to create something like a  
12 stencil. You can think of it like a stencil. It's not  
13 actually a stencil, but the program operates like a stencil.

14           And you can see there on the right the same pattern.  
15 They have created that stencil to anticipate what's going to  
16 happen. And without using the stack, without using the stack,  
17 the pattern looks through the bytecode and identifies whether  
18 there's a pattern there. And, if so, creates an array. And  
19 this you'll see from the source code itself.

20           Now, again, I want to point out something very  
21 important. There are lots of other things in Dalvik that are  
22 simulated. Dalvik does simulate a lot of things. So there's a  
23 file called "simulate," that you heard about yesterday.

24           But with respect to initializing arrays -- which is  
25 all we're talking about here. This patent is limited to this

1 very specific function. It doesn't happen very often. With  
2 respect to that, there's no simulation in Android. It's all  
3 pattern matching.

4 And you'll hear from a noted expert on the faculty at  
5 USF, who has analyzed this up side and down. And he'll talk  
6 about this pattern matching and why it's different.

7 Let's look at our next slide.

8 So the point on the '520 is also, I think, pretty  
9 simple. The patent requires simulating execution going through  
10 the stack.

11 And Android does it differently. Android uses  
12 pattern matching. Doesn't use the stack for pattern matching.  
13 For identifying the arrays, for identifying the arrays, Android  
14 does not use the stack and the values there.

15 Therefore, because -- and this is the most important  
16 limitation of Claim 1. The rest of these are fairly routine.  
17 But this method is a method of simulating execution that  
18 Android simply doesn't use.

19 Now, you heard a little bit about benchmarking  
20 yesterday. And I want to touch on that, briefly, because the  
21 benchmarking that you're going to see and hear about I don't  
22 think will contribute much to solving this problem.

23 First of all, the benchmarking was not done by  
24 independent experts. They relied on engineers at Oracle. And,  
25 obviously, engineers at Oracle, they have a stake in how this

1 case comes out. I think that's pretty clear.

2 And, number two, they didn't even do it the right  
3 way. On the '104 Patent, which talks about resolving symbolic  
4 and numeric references, what they say they're testing is what  
5 would happen if we just disabled that little function in  
6 Dalvik. But that's not what they did. They disabled a whole  
7 bunch of things. Things that are not even accused of  
8 infringement. So they, of course, got an answer that they  
9 liked, which was, oh, it's a lot slower.

10 Well, if you rip out half of what is in Dalvik, yes,  
11 you're going to slow it down. So what I say about that test is  
12 garbage in/garbage out.

13 What they did was inconsistent with what they're  
14 accusing in the lawsuit. And if you put garbage in, you get  
15 garbage out.

16 Now, the '520, it's even more dramatic. I told you,  
17 these arrays occur less than one-tenth of 1 percent of the  
18 time.

19 Well, what they set up for their so-called benchmark  
20 test on the '520 was, basically, a program that does one thing,  
21 says, "hello world," and has one big, massive array, as though  
22 that were the whole program.

23 They never tested any real life, realistic, average  
24 Android program. They set up a dummy program which, again, is  
25 garbage in/garbage out.

1           Now, I said no celebrity executives. We're going to  
2 be hearing from engineers and experts. And here are some of  
3 the folks you will be hearing from.

4           Andy McFadden is one of the lead Dalvik designers.  
5 He'll be talking to you about how instructions are created and  
6 what instructions do in Android.

7           And you'll hear from Dan Bornstein, who is the --  
8 gave Dalvik its name. Mr. Bornstein will talk about how the  
9 dex tool handles arrays, and how that is done.

10           Now Dr. Astrachan, he's an expert on Java Programming  
11 Language so he won't be appearing in Phase two.

12           But Professor David August, from Princeton, has  
13 analyzed the '104 Patent, and how Android handles instructions,  
14 and how numeric instructions, numeric references are used, and  
15 so on. And Professor August is here, and he'll be testifying  
16 about that a little bit later in the week.

17           And Professor Terrence Parr has analyzed the '520.  
18 He's a computer scientist on faculty at U.S.F. here in  
19 San Francisco. We have asked him to do a thorough analysis of  
20 the '520 in Android and he will share his conclusion with you  
21 that there is no infringement because Android does not simulate  
22 execution. The dx tool uses pattern matching.

23           So, again, our key points in Phase 2 are that Google  
24 made fundamentally different design choices for Android. The  
25 patents were created in the '90s. They weren't relevant to

1 what the Android designers were doing and they weren't used.

2 Google independently developed Android not knowing  
3 about the Sun patents and Android doesn't use Sun's technology.  
4 Android doesn't use symbolic references in its instruction  
5 sets, as required by the '104. It doesn't resolve references  
6 dynamically, as required by the '104. And it doesn't use  
7 simulated execution, as required by the '520.

8 And now I have to ask you again, as I did in Phase 1  
9 for one last thing; that is, to keep an open mind. We're still  
10 going second and our evidence won't begin until later this  
11 week. And we very much look forward to presenting it.

12 And, again, we thank you very much for the time and  
13 attention you're giving us.

14 **THE COURT:** All right. Thank you, Mr. Van Nest.

15 We're going to go ahead with the first witness unless  
16 someone in the jury box needs a break. No one indicates that.

17 So at this time Oracle may call its first witness.

18 **MR. NORTON:** Oracle calls Timothy Lindholm.

19 **TIMOTHY LINDHOLM,**

20 called as a witness for the Plaintiff herein, having been first  
21 duly sworn, was examined and testified as follows:

22 **THE WITNESS:** I do.

23 **THE COURT:** All right. Welcome again. Please have a  
24 seat and, remember, you've got to get about this close  
25 (indicating).

1           **THE WITNESS:** Yes. About like this?

2           **THE COURT:** Say your name again, please.

3           **THE WITNESS:** Timothy Lindholm.

4           **THE COURT:** All right. Welcome again.

5           Counsel, the floor is yours.

6           **MR. NORTON:** Thank you.

7                           **DIRECT EXAMINATION**

8   **BY MR. NORTON:**

9   **Q.** Good morning, Mr. Lindholm.

10 **A.** Good morning.

11 **Q.** Now, before you joined Google in 2005, you had worked at  
12 Sun for over a decade; is that right?

13 **A.** Yes, I think that's true.

14 **Q.** And your title at Sun, you were a distinguished engineer?

15 **A.** That was the title I had when I left Sun. It wasn't  
16 always that.

17 **Q.** And one of the things that did while you were at Sun was  
18 you worked on the edition of Java specifically for mobile and  
19 embedded software, is that right?

20 **A.** It kind of depends on what you mean by "worked on." I was  
21 a part of that organization, yes.

22 **Q.** And part of the technology that you were responsible for  
23 developing while you were at Sun was Java ME, correct?

24 **A.** Wasn't a developer in the sense of being a software  
25 developer.



1 Q. My question wasn't whether you were a software developer,  
2 but part of what worked with when you were at Sun as an  
3 engineer was Java ME; correct, sir?

4 A. Yes, that is part of what I worked with.

5 Q. And Java ME, that's the version of Java that was for  
6 mobile and embedded devices, correct?

7 A. Correct.

8 Q. And "mobile" that means phones, includes phones?

9 A. It includes phones, correct.

10 Q. Now, you, yourself, while you were at Sun, you were the  
11 inventor of 19 different patents; is that right?

12 A. I don't remember the number. I was -- I was an inventor  
13 on a number of patents. That number might be right.

14 Q. More than 10?

15 A. I believe more than 10.

16 Q. And not just patents, but patents specifically related to  
17 Java; correct, sir?

18 A. Yes. I think -- I think they were all related to Java in  
19 one way or another.

20 Q. And not just related to Java, but specifically related to  
21 Java Virtual Machines; correct, sir?

22 A. I don't -- some of them definitely were. I don't remember  
23 what all the patents were, so I can't say exhaustively they  
24 were all related to virtual machines.

25 Q. Now, when you were at Sun and working on Java and

1 inventing patents, you were not the only engineer at Sun who  
2 was doing such work, were you?

3 A. I was definitely not the only.

4 Q. There were a lot of other engineers who were making  
5 inventions that were related to Java Virtual Machines, correct?

6 A. There were a lot of people working on Java Virtual  
7 Machines. I'm not sure I understand what you mean by  
8 "inventions" in that statement.

9 Q. Well, you were not the only person who was at Sun  
10 responsible for coming up with innovations for Java Virtual  
11 Machines, right?

12 A. I certainly was not the only person responsible for such a  
13 thing at Sun.

14 Q. All right. There were hundreds of Sun patents that  
15 related to Java Virtual Machines, just in the time that you  
16 were at Sun?

17 A. I don't actually know how many patents there were. I had  
18 no way of knowing that at the time.

19 Q. Well, you had more than 10?

20 A. Umm, yes.

21 Q. And there were dozens of engineers working on Java; is  
22 that fair?

23 A. There certainly were at times, I think, dozens of  
24 engineers working on Java, but Java is much broader than the  
25 virtual machine.

1 Q. And it was no secret that Sun had a commitment to  
2 innovation in Java, right?

3 A. A secret? I mean, Sun was working on Java. I'm not sure  
4 what you would mean by "a secret" in that question.

5 Q. Well, you, yourself, would give public presentations about  
6 Sun's Java technology, right?

7 A. I would give -- I would give public presentations about  
8 Sun's Java tech, yes, yes.

9 Q. And when there were new innovations, for example, in  
10 particular implementations of the Java Virtual Machine, that  
11 was something that you would talk about publicly, right?

12 A. I don't really think I did that with respect to Java  
13 Virtual Machines.

14 Q. CDC is a particular implementation of the Java Virtual  
15 Machine, is that right?

16 A. Well, it contains a Java Virtual Machine, but it is not  
17 itself -- it's more than a Java Virtual Machine.

18 Q. But it contains a virtual machine?

19 A. Yes.

20 Q. And you would go out and you would speak publicly about  
21 the new versions of the -- the new implementations that Sun had  
22 of its virtual machines, of its specifications?

23 A. I would occasionally do that.

24 Q. Now, in 2005 you left Sun; you joined Google, right?

25 A. Correct.

1 Q. And in July 2005 you knew that Google was working on a  
2 Java Virtual Machine for Android, is that right?

3 A. In July -- I learned about it after joining -- well, wait  
4 now.

5 Umm, no. I don't think I did know about it in July  
6 of 2005.

7 MR. NORTON: May I approach?

8 THE COURT: Yes, you may.

9 (Whereupon, document was tendered  
10 to the witness.)

11 BY MR. NORTON:

12 Q. Mr. Lindholm, I've handed you Trial Exhibit 1.

13 A. Okay. I see this.

14 Q. And you recognize that document, right?

15 (Document displayed)

16 A. I'm going to page through it briefly.

17 I believe I've seen this before.

18 Q. There is handwriting on the first page?

19 A. Yes.

20 Q. That's your handwriting, isn't it?

21 A. I think that it is.

22 Q. And if we turn to Page 9?

23 A. Page 9 of 10?

24 Q. Yes, sir.

25 A. I do see it.

1 Q. All right. And then under "Current Scenario" it says:

2 "Developing a clean room implementation of a

3 JVM."

4 Right?

5 A. Yes, I do see that.

6 Q. And JVM means Java Virtual Machine?

7 A. Yes. I assume it does.

8 Q. Well, in your experience working at Sun for over a decade  
9 JVM is the term that you used to refer to a Java Virtual  
10 Machine?

11 A. That's what I would use, but I didn't write this so I  
12 can't be sure that that's what -- you know, I can only assume  
13 that that's what this person intended.

14 Q. Now, in July, 2005 you were not the only former Sun  
15 engineer at Google who had experience with virtual machines,  
16 correct?

17 A. I'm not sure. I think -- I think -- I don't know  
18 necessarily when other Google engineers joined Google, sir, any  
19 ex-Sun engineers joined Google.

20 Q. In July 2005 Robert Greisemer, he was at Google, right?

21 A. I'm -- if you say so, I would believe you, but I don't --  
22 I don't know that I recall that myself.

23 Q. All right. Robert Greisemer used to work at Sun, right?

24 A. Yes.

25 Q. He worked on Java Virtual Machines?

1 A. Yes.

2 Q. And he joined Google?

3 A. Yes.

4 Q. Whether it was 2005 or some other year, you know he joined  
5 Google?

6 A. Yes. I'm just saying I didn't track Robert's career and  
7 I'm not sure when he joined Google.

8 Q. And then Frank Yellin. You know Mr. Yellin?

9 A. I do know Frank.

10 Q. He was the co-author of the *Java Virtual Machine*  
11 *Specification* with you, right?

12 A. Correct.

13 Q. And when you joined Google in 2005 Mr. Yellin was there,  
14 correct?

15 A. That I do believe. Yes, I do remember that.

16 Q. And another Sun engineer who had worked on some Java  
17 Virtual Machines, Urs Hoetzle, he was also at Google when you  
18 joined in 2005, correct?

19 A. Yes. He's one I remember for sure.

20 Q. And Srdjan Mitrovich, another former Sun engineer who  
21 worked on Java Virtual Machines and joined Google; correct,  
22 sir?

23 A. Yes. I think I remember. I remember that he was there  
24 then, correct.

25 Q. And Todd Turnage, another Sun engineer who worked on Java

1 Virtual Machines and joined Google; correct, sir?

2 **A.** He was -- yes, he was -- he had been out of Sun for much  
3 longer than these other guys; but, yes, he was at Google, I  
4 believe.

5 **Q.** And David Stoutamire, another former Sun engineer who  
6 worked on Java Virtual Machines and joined Google; correct,  
7 sir?

8 **A.** David did -- did eventually join Google. I'm not sure  
9 when exactly that occurred.

10 **Q.** Ben Gomez, yet another Sun engineer who worked on Java  
11 Virtual Machines and joined Google; correct, sir?

12 **A.** Yes. He -- Ben joined Google, correct.

13 **Q.** Now, in 2005 Mr. Rubin asked you to become an Android  
14 project advisor, correct?

15 **A.** That's correct.

16 **Q.** And you agreed to do so, right?

17 **A.** I did agree to do so, although it didn't actually come to  
18 anything.

19 **Q.** Well, you didn't just agree to do so. You told Mr.  
20 Lindholm that's what you had already been doing, correct?

21 **A.** I told Mr. Rubin, I assume you meant.

22 **Q.** I beg your pardon?

23 **A.** You said I told Mr. Lindholm.

24 **Q.** I beg your pardon.

25 You told Mr. Rubin that you had already been acting

1 as an Android project advisor when he gave you the invitation,  
2 correct?

3 **A.** Yes. That is what I believe -- I believe you're referring  
4 to an email and I think that that is what that email says.

5 **Q.** And what you told Mr. Rubin was that your main value would  
6 be as a J2ME runtime generalist, correct?

7 **A.** I -- I'm going by memory of an exhibit that I don't have  
8 in front of me. That corresponds with my memory of it, but I'm  
9 a little bit -- I'm a little bit hesitant of going by memory of  
10 this.

11 **Q.** Sure. And J2ME, that's the Java 2 Micro Edition?

12 **MR. NORTON:** May I approach?

13 **THE COURT:** Yes, you may.

14 (Whereupon, document was tendered  
15 to the witness.)

16 **THE COURT:** That exhibit is already one received in  
17 evidence?

18 **MR. NORTON:** Yes, it is.

19 **THE COURT:** Then please you may go ahead and show it  
20 to the jury.

21 (Document displayed)

22 **A.** Okay. I do recall seeing this and having discussed it in  
23 this trial before.

24 **BY MR. NORTON:**

25 **Q.** Right. And what you said to Mr. Rubin, if we can scroll



1 down so the jury can see as well -- I'm sorry. I've asked for  
2 the wrong document. Let's take that down.

3 A. Do I have the right one?

4 Q. You do not.

5 A. Okay.

6 Q. So you can turn away from that particular document. Thank  
7 you, Mr. Lindholm.

8 A. Okay.

9 Q. What you told Mr. Rubin was that you could provide value  
10 as a runtime generalist, correct?

11 A. Well, if I'm turned away from this document...

12 I think that corresponds with my memory of a document  
13 that I don't have before me.

14 Q. And you told Mr. Rubin that you could provide value as an  
15 interpreter of the engineering business and legal ecosystem,  
16 correct?

17 A. Same issue. I don't have this in front of me. That  
18 sounds correct, but I don't have it.

19 Q. I'm sorry. Let's go back to 321. You do have Exhibit 321  
20 in front of you, correct?

21 A. I do.

22 Q. Let's go back to Exhibit 321.

23 (Document displayed)

24 Q. And if we go halfway down the page?

25 A. Yes.

1 Q. All right. And it says here, this is the email from you  
2 on August 9, 2005.

3 A. Yes.

4 Q. And you say to Mr. Rubin:

5 "Sure, sign me up. I think that this only  
6 puts a name on what I've already been doing  
7 and hope to keep doing."

8 A. I see that.

9 Q. And here you're talking about the thing you've already  
10 been doing is acting as an Android project advisor, right?

11 A. Yes, for this very short time, given that I had only just  
12 joined Google a month ago.

13 Q. Right. And then we go down to the sentence that says:

14 "I think my main value..."

15 A. I do see that.

16 Q. All right.

17 "...would be as a J2ME runtime generalist."

18 Right?

19 A. Correct.

20 Q. Now, J2ME is the Mobile Edition -- Micro Edition, right?

21 A. Correct.

22 Q. And runtime generalist, runtime includes the virtual  
23 machine, right?

24 A. That's what I would mean by it, yes.

25 Q. And then you go on to say that that in addition your main

1 value includes acting as an interpreter of the  
2 engineering/business/legal ecosystem?

3 **A.** Correct. I see that.

4 **Q.** Now, not only did you act as an Android project advisor,  
5 but you also gave Mr. Rubin advice about specific  
6 implementations of J2ME that Sun offered; is that right?

7 **A.** I don't remember any details about this. I think that --  
8 that prior to the discussions that began with Sun, I probably  
9 did give Andy that sort of -- some advice on that.

10 **MR. NORTON:** May I approach?

11 **THE COURT:** You may.

12 (Whereupon, document was tendered  
13 to the witness.)

14 **MR. NORTON:** I've handed Mr. Lindholm Exhibit 131  
15 which is already in evidence.

16 (Document displayed)

17 **A.** Okay. I see this.

18 **BY MR. NORTON:**

19 **Q.** All right. This is an email string between you and Mr.  
20 Rubin from November 9th of 2005, right?

21 **A.** Yes. I believe that's true.

22 **Q.** All right. And it begins with an email that you sent.  
23 The first email in the string chronologically is from you to  
24 Mr. Rubin?

25 **A.** Correct.

1 Q. And the title of this particular email string that you  
2 started was "Another Thought on Sun Motivation"?

3 A. That's what the subject is, yes.

4 Q. And then in that first email from you there is a lengthy  
5 discussion -- or a discussion, in any event, of different Sun  
6 J2ME implementations, right?

7 A. I'm glancing through that, but, yes, I think that that is  
8 what this is.

9 Q. You talked to him about an implementation called KVM,  
10 right?

11 A. I see that, yes.

12 Q. And then you describe another one called Monty for CLDC,  
13 right?

14 A. Correct.

15 Q. And then you talk about another one called CDC, right?

16 A. Yes. Although CDC was not an implementation, it was a  
17 design for -- it was broader than a specific implementation.

18 Q. Well, the word you used here in your email to Mr. Rubin  
19 was "CDC implementation," right?

20 A. Okay, yes. Oh, there I see it. Yes. Yes, it would be an  
21 implementation of the CDC, correct.

22 Q. And so these are all different implementations that  
23 include Java Virtual Machines, correct?

24 A. Correct.

25 Q. And you were going through these different implementations

1 and explaining their differences to Mr. Rubin, right?

2 A. Umm, yes.

3 Q. All right.

4 A. In a fairly high level way. This is not very detailed.

5 Q. And then Mr. Rubin had some questions for you and you gave  
6 him some further direction in your email in response, right?

7 The email that you sent at 2:10 p.m.?

8 A. Yes. That's -- that follows up on the previous -- on the  
9 earlier email in this chain.

10 Q. All right. So you went into some of the details of the  
11 differences between, for example, one of the implementations  
12 called CDCL and another one which was part of the CDC  
13 implementation, right?

14 A. Correct.

15 Q. And the things that you're just specifically describing  
16 here are aspects of the virtual machine, correct?

17 A. I would like to read this a little bit more closely.

18 Yes, I think this is primarily -- these are primarily  
19 issues for the Java Virtual Machine.

20 Q. And then Mr. Rubin responds again in the email immediately  
21 above, and he says.

22 "Of course, our guys are implementing that  
23 later for the isolation and resource  
24 management arguments."

25 Responding to your email below, right?

1 A. I think that that -- yes, I'm not -- yes. That's what it  
2 says here.

3 Q. And he's talking about an implementation of a virtual  
4 machine, right?

5 A. I'm not sure. What I recall at this time is that Android  
6 was not implementing a virtual machine. They were implementing  
7 stuff at the Linux level. You know, operating system level.

8 Q. You've just had a series of emails with Mr. Rubin  
9 discussing Sun implementations and specifically about the  
10 features of a virtual machine, correct?

11 A. That's what the lower part of this email was about, yes.

12 Q. Right. And then in immediate response to that email Mr.  
13 Rubin says:

14 "Our guys are implementing that later."

15 Correct, Mr. Lindholm?

16 A. That's what that says.

17 Q. And then you respond:

18 "We need to make sure that whatever license

19 Sun proposes still allows you to do that."

20 That was your response?

21 A. That was my response, yes.

22 Q. All right. Now, about a month after this email, which you  
23 can set aside now, you got a run-through of the Android  
24 technology from the Android engineers, right?

25 A. I don't remember that specifically. Do you have something

1 particular in mind?

2 **MR. NORTON:** May I approach?

3 (Whereupon, document was tendered  
4 to the witness.)

5 **BY MR. NORTON:**

6 **Q.** Mr. Lindholm, that is Exhibit 325. It's already admitted.

7 **MR. NORTON:** If we could publish it, please?

8 (Document displayed)

9 **BY MR. NORTON:**

10 **Q.** And, Mr. Lindholm, this is a weekly diary entry that you  
11 emailed to yourself, right?

12 **A.** The -- well, no. That isn't the -- that isn't what this  
13 is. Google -- this was a practice that Google had at the time  
14 where you would send weekly reports. They were published.  
15 They were published within Google.

16 **Q.** Okay. But it's an email that you wrote?

17 **A.** I think so, yes.

18 **Q.** On December 12, 2005?

19 **A.** Yes.

20 **Q.** And you listed things that you had been doing in the  
21 previous week?

22 **A.** Yes.

23 **Q.** And one of the things that you listed here was:

24 "Two meetings on Android licensing."

25 Right?

1 A. That's what this says here.

2 Q. And immediately beneath that you wrote:

3 "Got a run-through the Android technology."

4 Right?

5 A. I see that here, yes.

6 Q. So it's fair to say that in December of 2005 you got a  
7 run-through the Android technology in the same week that you  
8 had two Sun meetings on Android licensing, right?

9 A. I think that's true, whatever the Android technology was  
10 at this time.

11 Q. All right. And at this time, as we have already seen from  
12 Exhibit 1, there were efforts to develop a Java Virtual Machine  
13 at Android, right?

14 A. No, I don't know that.

15 Q. We saw Exhibit 1. It said, "Current Scenario - developing  
16 virtual machine," right?

17 A. As I said, the -- what I remember of this time, there was  
18 work being done at the Linux level that would support virtual  
19 machine implementation, but I don't recall -- I don't recall  
20 that there was a virtual machine implementation going on at  
21 that point.

22 Quite the opposite. I think at this point we were  
23 talking with Sun about possibly doing that joint -- that joint  
24 agreement with them where we would jointly work on a virtual  
25 machine and that was still in flight.



1 Q. Let's go back to Trial Exhibit 1, which you have in front  
2 of you?

3 A. Which --

4 Q. It's the bottom of your stack.

5 A. Oh, that's --

6 Q. Trial Exhibit 1.

7 A. Yes, yes, yes.

8 Q. Page 9.

9 A. Page 9?

10 Q. Right. And this document is from July 26, 2005, right?

11 A. I'm still --

12 Q. For the date you can look at the first page, sir.

13 A. Yeah. Yes. Okay. And I'm now on Page 9.

14 Q. In the "Current Scenario"?

15 A. Okay, I see that.

16 Q. Is:

17 "Developing a clean room implementation of a

18 JVM."

19 Right?

20 A. That's what is written here, but I did not write that. So  
21 I think --

22 Q. Mr. Lindholm, that answers my question. Thank you.

23 A. Okay.

24 Q. All right. Now, after your December 2005 weekly entry,  
25 then you were part of a team of Android team members who met

1 with Sun engineers to discuss Sun's CDC stack, right?

2 **A.** I was part of the group that met with Sun to discuss the  
3 co-development agreement that was discussed in 2005, 2006.

4 **MR. NORTON:** May I approach?

5 **THE COURT:** You may.

6 (Whereupon, document was tendered  
7 to the witness.)

8 **MR. NORTON:** I've handed Mr. Lindholm Exhibit 212,  
9 which is already in evidence. If we could publish it, please?

10 (Document displayed)

11 **BY MR. NORTON:**

12 **Q.** Now, this is an email. It begins with an email from Mr.  
13 Rubin to you and others, right?

14 **A.** I can't actually tell. The lower part of the email is an  
15 included -- is an included email that Andy wrote, but I can't  
16 tell who all it went to.

17 **Q.** All right. Well, let's just do what we can here. So  
18 there are two emails on this page, right?

19 **A.** Correct.

20 **Q.** There is an email from you responding to Mr. Rubin on  
21 January 30, right?

22 **A.** Yes.

23 **Q.** All right. And immediately beneath that is the email that  
24 says "Andy Rubin wrote"?

25 **A.** Yes.

1 Q. And so it's fair to say that you were responding to the  
2 email Andy Rubin wrote?

3 A. Yes. Its fair to say that.

4 Q. All right. And so you were one of the people who received  
5 Mr. Rubin's email, correct?

6 A. Yes, I think that is true.

7 Q. All right. And when he wrote, he addressed that email to  
8 "Droids," right?

9 A. Uh-huh.

10 Q. "Droids" is a term to refer to the people who worked on  
11 Android?

12 A. No. I don't think that is in any formal sense true. I  
13 think it was just a nickname that Andy used in this context.

14 Q. You do see, of course, the similarity between the name  
15 Droids and Android, right?

16 A. Oh, I do, yes.

17 Q. And that is a term that Mr. Rubin used to refer to members  
18 of the Android team, right?

19 A. I don't know that to be true.

20 Q. Now, in his email he says:

21 "Sun is coming in with six or seven of their  
22 engineers to detail their CDC stack to us."

23 Right?

24 A. I see that here.

25 Q. And you attended that meeting, right?

1 A. I'm not sure that I did.

2 Q. Well, Mr. Rubin indicated that "mandatory for attendance,"  
3 and then he listed some people, right?

4 A. Mr. Rubin was not my boss.

5 Q. Mr. Rubin listed people he thought were mandatory for  
6 attendance, right, Mr. Lindholm?

7 A. That is what it says here, yes, yes.

8 Q. All right. And the first one on the list is Dan  
9 Bornstein, right?

10 A. That's what's said here, yes.

11 Q. And he's one of the Android engineers, right?

12 A. Yes, that is true.

13 Q. And Brian Swetland, he is another Android engineer?

14 A. Yes, I think that's true.

15 Q. And Rich Miner, he's one of the Android founders, right?

16 A. I never really knew Rich, so I don't know about his role.

17 Q. And then we see your name in the list of mandatory people,  
18 right?

19 A. That's what's in this list, yes.

20 Q. If we go immediately beneath this list here, Mr. Rubin  
21 says:

22 "We should be prepared to share with them an  
23 architectural view of our system, especially  
24 as it relates to the Java VM."  
25 Right?

1 A. I see that here.

2 Q. So Mr. Rubin wanted you to be at the meeting with the Sun  
3 engineers to discuss the Android architecture especially as it  
4 relates to the Java VM; fair?

5 A. I think that that's fair.

6 Q. So after this meeting, after -- you can set aside that  
7 exhibit.

8 A. Okay.

9 Q. Now, you were -- you participated in discussions with  
10 other folks at Google about how to deal with the threat of Java  
11 lawsuits, right?

12 A. No. I don't recall such a thing.

13 Q. In fact, you participated in a meeting with other Google  
14 employees about Java lawsuits and what to do about them, right?

15 A. I don't remember such a meeting.

16 MR. NORTON: May I approach?

17 THE COURT: You may.

18 (Whereupon, document was tendered  
19 to the witness.)

20 BY MR. NORTON:

21 Q. Mr. Lindholm, I've handed you two exhibits, 1042 and 1043.

22 A. Okay. Right.

23 Q. These are not yet in evidence.

24 1042 is an email from you to Dave Sobota on  
25 February 19, 2006, is that correct?

1     **A.**     That is correct.

2                 **MR. NORTON:**   I move the admission of Exhibit 1042.

3                 **THE COURT:**   Any objection?

4                 **MR. WEINGAERTNER:**   Objection, your Honor, 403.

5     Objection, relevance.

6                 **MR. NORTON:**   I think I described the email as a 2006  
7     email. I misspoke. It's 2009.

8                 **MR. WEINGAERTNER:**   This is also not a disclosed  
9     exhibit, your Honor.

10                **MR. NORTON:**   It was not disclosed. I asked Mr.  
11     Lindholm questions. I'm offering this document to impeach.

12                **THE COURT:**   For impeachment purposes the document  
13     doesn't come in. You may have the witness read from the line  
14     item that contradicts his testimony, but it will not be  
15     offered -- it will not be received in evidence.

16     **BY MR. NORTON:**

17     **Q.**     Mr. Lindholm?

18     **A.**     Yes.

19     **Q.**     On the first page of 1042 there is an email that begins  
20     "Brett's Thoughts." Do you see that.

21     **A.**     About halfway through 1042, yes, I see that.

22     **Q.**     All right. And in that email it says:

23                 "Proposal: Google buys the rights to Java  
24                 from Sun (patents, copyrights, et cetera)."  
25     Right?

1 A. That seems to be what Brett, Brett or Dave wrote.

2 Q. And this is something that you had received on  
3 February 19, 2009, right?

4 A. I believe I received it.

5 Q. And among the things it states in this email, it says:

6 "Good for Google. Our Java lawsuits go  
7 away."

8 Right?

9 A. I see that somebody wrote that -- that here, yes.

10 Q. All right.

11 MR. WEINGAERTNER: Objection, your Honor. This is  
12 cumulative of testimony from Phase 1. Just for clarification,  
13 are we going to be going into more cumulative testimony?

14 MR. NORTON: I believe the point I'm trying to  
15 establish is not cumulative.

16 THE COURT: Well, you're reading from a document --  
17 this is not the part -- where is the part that this witness  
18 wrote? That's the only part you're entitled to, when you're  
19 using it for impeachment. If you wanted to put this in  
20 evidence, it should have been disclosed.

21 MR. NORTON: Well, this portion is in evidence. But  
22 what I'm trying to establish is that Mr. Lindholm was  
23 specifically aware of the Java lawsuits consideration and  
24 participated in discussions, which I can do through this unique  
25 document which is in addition to the testimony that was covered

1 in Phase 1.

2 **THE COURT:** Mr. Lindholm, did you get this email?

3 **THE WITNESS:** I think I must have gotten it.

4 **THE COURT:** All right. So it refers to all this  
5 stuff about Java lawsuits and buying patents, copyrights,  
6 et cetera, from Sun as a possibility, as a proposal. Right?

7 **THE WITNESS:** Yeah. I think that that's what this --  
8 what somebody else wrote.

9 **THE COURT:** Somebody else wrote it, but you got it;  
10 true?

11 **THE WITNESS:** I think I did receive it.

12 **THE COURT:** All right. Did you read it?

13 **THE WITNESS:** Umm, I assume I -- I believe I did read  
14 it.

15 **THE COURT:** All right. So let's just -- is that  
16 enough? Can we move to the next point?

17 **MR. NORTON:** I have one more question on this and I  
18 will set this aside.

19 **THE COURT:** Go ahead.

20 **BY MR. NORTON:**

21 **Q.** What you wrote to Mr. Sobota was:

22 "Interesting considerations. I will come to  
23 the meeting."

24 Right?

25 **A.** That's what I wrote at the top, yes.



1 Q. And then if you will turn to Exhibit 1043?

2 A. Okay.

3 Q. Now, Mr. Lindholm, you went to the meeting, didn't you?

4 A. Umm, I don't recall whether this meeting occurred.

5 Q. You have 1043 in front of you?

6 A. Yes, I do.

7 Q. And you have in your -- had in your calendar a meeting --

8 MR. WEINGAERTNER: Objection, your Honor. Also not  
9 disclosed.

10 MR. NORTON: Again, for impeachment.

11 THE COURT: It's not impeachment. He said that --  
12 what does the contradict? What is his --

13 MR. NORTON: I asked him if I had attended a meeting  
14 and he said he didn't believe -- it wasn't true if there had  
15 been a meeting.

16 THE COURT: It says he doesn't recall whether this  
17 meeting occurred.

18 So you may show him his calendar for purposes of  
19 refreshing his memory, but the calendar itself will not go into  
20 evidence if it was not disclosed.

21 MR. NORTON: Understood.

22 THE COURT: So if you have the calendar, show it to  
23 him and see if it refreshes his memory that the meeting did  
24 take place. That would be a proper way to go.

25

1 BY MR. NORTON:

2 Q. Mr. Lindholm, you have Exhibit 1043, correct?

3 A. I do.

4 Q. Is that a calendar entry for you for March 4, 2009?

5 A. Yes, I think it is.

6 Q. Does it refresh your recollection that there was a meeting  
7 on March 4, 2009 to discuss the topics that were in  
8 Mr. Slatkin's email to Mr. Sobota?

9 A. It refreshes my memory that a meeting had been scheduled,  
10 but that doesn't mean that I went to it and I don't recall  
11 attending this meeting.

12 MR. NORTON: May I approach the witness?

13 THE COURT: How much more do you have to go?

14 MR. NORTON: About five minutes, ten at most.

15 THE COURT: Can the jury continue?

16 (Jurors respond affirmatively.)

17 THE COURT: They are indicating yes, so we'll  
18 continue.

19 BY MR. NORTON:

20 Q. Mr. Lindholm, I've handed Exhibit 25, the *Java Virtual*  
21 *Machine Specification*.

22 (Whereupon, document was tendered  
23 to the witness.)

24 A. First Edition.

25 Q. You wrote that book, right?

1 A. I co-wrote it with Frank Yellin, and it was based on  
2 preexisting material as well.

3 Q. Now, you're very familiar with this book, are you not?

4 A. I was back in 1997.

5 Q. And you still have copies of this book?

6 A. In a box in the basement.

7 Q. Now, the book itself, this book is the definitive  
8 definition of the Java Virtual Machine, right?

9 A. Yes, that is what it aspired to be.

10 Q. Now, if you can please turn to -- there is a copyright  
11 page in the front of the book.

12 A. Okay. I think I am on that page.

13 Q. And we see here, it says on this page -- and you have seen  
14 this page before, right?

15 A. Yes.

16 Q. It says:

17 "The release described in this manual may be  
18 protected by one or more U.S. patents,  
19 foreign patents, or pending applications."  
20 Correct?

21 A. I do see those words here.

22 Q. All right. And then beneath that there are detailed terms  
23 under which Sun grants a license with conditions, right?

24 A. I'm not a lawyer, but I think that, generally speaking,  
25 that's what this is.

1 Q. And you've seen that before, right?

2 A. Yes.

3 Q. And you're familiar with those conditions, right?

4 A. From the standpoint of being an engineer. I'm not -- not  
5 legal.

6 Q. But it's not as though you had never seen this particular  
7 language before, correct?

8 A. Correct. I have seen it before.

9 Q. Now, in this book the book you wrote, the *Java Virtual*  
10 *Machine Specification*, there a Chapter 9. It starts on  
11 Page 401, right?

12 I'm sorry. 389, I should say.

13 A. That's by the book -- okay, I'm there.

14 Q. That's Chapter 9, right?

15 A. That is Chapter 9.

16 Q. Now, the entirety of Chapter 9 -- now, that chapter,  
17 that's 40 pages long, right?

18 A. 39 to... Yes, I think it might be exactly 40 pages long.

19 Q. Now, this chapter, if we look at the first page I directed  
20 you to, Page 389.

21 A. Okay.

22 Q. It says here:

23 "The technique documented in this chapter..."

24 Reading the last sentence that appears just above

25 Section 9.1.

1 "The technique documented in this chapter is  
2 covered by U.S. Patent 5,367,685."  
3 Right?

4 **A.** Yes. I do see that here.

5 **Q.** And so the entirety of those 40 pages is devoted to  
6 describing an optimization that is covered by that specific  
7 patent, correct?

8 **THE COURT:** Well, that's a legal question.

9 Are you suggesting that everything -- that somehow  
10 Chapter 9 restates what's in the patent?

11 **MR. NORTON:** No, your Honor. I'm asking the witness  
12 whether --

13 **THE COURT:** That is not -- I want to make that real  
14 clear to the jury.

15 What is legally protected is what is at the end of  
16 the patent in the claims itself. This is apparently some  
17 description that goes on about the technique that is involved  
18 in the '685 patent, but what's in Chapter 9 does not mean that  
19 it is a new description of what the claims cover. No way.

20 This is what the claims cover: The precise wording  
21 that was issued by the PTO.

22 Now, it is perfectly okay for counsel to bring to  
23 your attention that this witness knew about the '685 patent and  
24 that he knew -- he knew a lot about it, maybe from the fact  
25 that it was described in this chapter. That is perfectly okay

1 because one of the issues that the plaintiff has the burden on  
2 is to prove knowledge and willfulness with respect to one of  
3 the issues. For that purpose, this would be okay.

4 Is that your purpose?

5 **MR. NORTON:** It is indeed, your Honor.

6 **THE COURT:** All right. But it would not be a correct  
7 purpose to try to somehow transmogrify the meaning of these  
8 claims into something that was written in a whole chapter.  
9 That's not -- that is not what would be proper.

10 And I suggest to you that is not what counsel had in  
11 mind, but that might be the way you were going to misconstrue  
12 it over there in the jury box.

13 So with that caveat I will let you continue. Go  
14 ahead.

15 **MR. NORTON:** Thank you, your Honor.

16 **BY MR. NORTON:**

17 **Q.** So what you were describing in Chapter 9 was a technique  
18 that was covered by this specific patent; correct, Mr.  
19 Lindholm?

20 **A.** Umm, I don't believe I was making a legal conclusion about  
21 the coverage. I was --

22 **THE COURT:** No. You said -- you used the word  
23 "covered," right? Even if -- we all know it's not legal. It's  
24 not legal, but you used the word "covered by the patent,"  
25 right?

1           **THE WITNESS:** I'm not sure that I wrote this.

2           **THE COURT:** Well, you authored the book, one of the  
3 two authors, right?

4           **THE WITNESS:** But we didn't write every -- every  
5 line. We might have been told by a lawyer to include this.  
6 I don't recall how exactly this line came into being.

7           **THE COURT:** Go ahead, counsel.

8 **BY MR. NORTON:**

9 **Q.** You were familiar with the invention described in the '685  
10 patent, right?

11 **A.** I don't -- I don't recall that I ever read the patent. I  
12 don't think I was particularly familiar with it at a patent  
13 level.

14 **Q.** You were familiar with Mr. Gosling's invention that  
15 described symbolic reference resolution?

16 **A.** Are you asking about am I familiar with a patent about  
17 that topic?

18 **Q.** Well, let's do it a little more generally.

19           You knew that Mr. Gosling had invented -- had patents  
20 that related to Java, right?

21 **A.** I had general knowledge that Mr. Gosling had patents, yes.

22 **Q.** And you knew that one of those patents related to the Java  
23 Virtual Machine -- at least one related to the Java Virtual  
24 Machine, right?

25 **A.** I guess I -- I think I must -- we'll say yes, but I

1 don't -- I don't believe that I've actually read his patents.  
2 I didn't have a means of doing that.

3 Q. And you knew that one of the things that Mr. Gosling had  
4 invented -- whether you knew whether there was a patent  
5 specifically and had read the patent specifically -- that he  
6 had come up with an idea for symbolic reference resolution on  
7 Java Virtual Machines, right?

8 A. I don't know specifically that James had done that. That  
9 aspect of the Java Virtual Machine was -- preexisted my --  
10 preexisted my employment at Sun.

11 Q. Because you didn't start at Sun until 1994?

12 A. Correct.

13 Q. Right. And the description, the optimization that you're  
14 describing here in Chapter 9, it does concern symbolic  
15 reference resolution, correct?

16 A. I think it's an optimization that's in the -- in that  
17 area.

18 Q. And that optimization that you describe in Chapter 9 that  
19 is in that area, you said in the book is covered by the '685,  
20 right?

21 A. That is what's written here in the book, yes.

22 Q. Now, I just want to be clear. My questions are focused  
23 specifically on the time before July of 2010.

24 A. Okay.

25 Q. Now, at that point in your career you had spent a decade



1 at Sun working on Java Virtual Machines, right?

2 **A.** About -- well, I didn't work on Java Virtual Machines that  
3 whole time, but I spent a decade at Sun.

4 **Q.** And you are the author of the *Java Virtual Machine*  
5 *Specification*, Volumes 1 and 2 -- Editions 1 and 2?

6 **A.** Co-author, but yes.

7 **Q.** And you are very knowledgeable about the technology that  
8 Sun included in virtual machines for mobile phones?

9 **A.** No, not so much.

10 **Q.** You are knowledgeable about various implementations that  
11 Sun came up with for Java ME for mobile phones, right?

12 **A.** I was knowledgeable of their general properties, yes.

13 **Q.** And you personally are the inventor of some number of  
14 patents that relate to Java Virtual Machines, right?

15 **A.** Yes.

16 **Q.** And when you joined Android, you received documents that  
17 explained to you that Google was working on a Java Virtual  
18 Machine for Android, right?

19 **A.** I'm sorry. You said when I joined Android. I never  
20 joined Android.

21 **Q.** Let's not quibble.

22 When you joined Google, you received documents right  
23 off the bat, by July 2005, that told you that Google was  
24 working on a Java Virtual Machine for Android, correct?

25 **A.** I -- I -- we've seen the documents that I received and

1 they say what they say.

2 Q. And Mr. Rubin asked you to be a project advisor for  
3 Android, right?

4 A. He did ask me to do that.

5 Q. And you agreed?

6 A. I agreed, but it never really went anywhere.

7 Q. And then you got a run-through the Android technology,  
8 right? We saw that document, too.

9 A. There is -- if you're referring to that week- -- the  
10 email, the weekly email --

11 Q. Yes, I am.

12 A. (Continuing) -- that's what that says.

13 Q. All right. And you did get a run-through the Android  
14 technology, right?

15 A. I don't specifically recall that, but -- but I take the  
16 word of the email that -- that was there.

17 Q. All right. And you participated in licensing discussions  
18 with Sun for Android, right?

19 A. Or something very different from what we were just talking  
20 about. For a code development, code sharing arrangement, the  
21 2005, 2006 discussion, yes.

22 Q. Mr. Rubin asked you to participate in meetings with Sun  
23 engineers to discuss Sun's CDC implementation, correct?

24 A. Yes. I think that was the same thing we were just talking  
25 about.

1 Q. And Mr. Rubin wanted you at a meeting where Android  
2 engineers would discuss the Android architecture as it related  
3 to the JVM, correct? We saw that, too?

4 A. I saw that Mr. Rubin wanted me in that meeting. I don't  
5 recall whether I attended.

6 Q. And you, yourself, wrote Chapter 9 of the virtual machine  
7 specification which describes an optimization that's covered by  
8 the '685 patent, right?

9 A. I was the co-author of that book and it does include that  
10 coverage statement.

11 Q. Now, despite your experience, your knowledge, your role as  
12 a project advisor for Android, your role in the licensing  
13 discussions, your participation in meetings with Java engineers  
14 from Sun, despite all those things, Mr. Rubin never asked you  
15 to conduct any investigation to see whether Android technology  
16 infringed any of those Sun patents, is that right?

17 A. As far as I recall, no, he never did.

18 Q. Never asked you to do anything to see, does Android  
19 infringe one of these Java patents on -- for virtual machines?

20 A. If we're talking about Android as it had become, no, I  
21 didn't participate in the development or design architecture of  
22 Android. I played no role in that, in what Android is today.

23 Q. My question isn't whether you participated in the design,  
24 development or architecture, but whether Mr. Rubin ever asked  
25 you: Tim, given all you know about Java Virtual Machines and

1 Sun technology, could you please check and see whether they  
2 have done anything that might infringe one of those patents  
3 that you or one of your colleagues had over at Sun?

4 **A.** Absolutely not. I don't recall such a thing.

5 **Q.** Thank you.

6 **THE COURT:** All right. Done?

7 **MR. NORTON:** That's all. Thank you.

8 **THE COURT:** All right. We will take our 15-minute  
9 break at this time. Please remember the admonition.

10 **THE CLERK:** All rise.

11 (Jury exits courtroom at 9:31 a.m.)

12 **THE COURT:** The witness can step down have a  
13 15-minute break as well.

14 Everyone else be seated.

15 I just want to be clear real, Mr. Jacobs. There is  
16 no way you should be trying -- the witness can step down. Take  
17 your break. You should not be here for this.

18 (Witness exits the courtroom.)

19 **THE COURT:** You cannot try to adjust the claim  
20 language by relying on Chapter 9 and saying that everything in  
21 Chapter 9 is covered by that patent.

22 Now, I assume that you are only getting into that  
23 Chapter 9 to show willfulness and that he was aware of the '685  
24 patent. That's a fair argument. But if later on some expert  
25 comes in and relies on that Chapter 9, the judge in this case

1 is going to be quite upset.

2           **MR. JACOBS:** Your Honor, we had and have no such  
3 plan. There is no such reference in any of the expert reports.  
4 There is no testimony that we intend to elicit comparing the  
5 contents of Chapter 9 to the accused product or the patent.

6           **THE COURT:** All right. Well, thank you.

7           Please don't go near that argument. You know, it's a  
8 common gimmick for companies that have patents to write  
9 something about it and say it covers the things it doesn't  
10 cover. It's a legal question.

11           **MR. VAN NEST:** Your Honor, I'm worried that our  
12 jurors might be confused.

13           **THE COURT:** Why?

14           **MR. VAN NEST:** Well, you held up a handout while we  
15 were talking about the '685. The '685 is not a patent-in-suit.  
16 Remember, that's this whole --

17           **THE COURT:** Well, that will get straightened out in a  
18 minute. What I was handing up was the claim language, trying  
19 to emphasize to them that it's what the PTO said was covered  
20 that counts, not what somebody writes in a book, a self-serving  
21 book.

22           **MR. VAN NEST:** Understood. But what I was worried  
23 about is that it sort of left the implication that the '685 was  
24 one of the --

25           **THE COURT:** All right. I will let you lawyers have

1 one minute to explain that whenever the jury comes back. You  
2 want to do that?

3 **MR. VAN NEST:** I would rather have your Honor just  
4 tell them that the '685 is not one of the patents-in-suit.

5 **THE COURT:** I can't do that without explaining that  
6 it's one of the -- it's in the lineage of the one that is in  
7 suit.

8 **MR. VAN NEST:** There is no evidence of that yet  
9 either.

10 **THE COURT:** Isn't it -- is the patent in evidence?

11 **MR. NORTON:** It is.

12 **THE COURT:** Then there is evidence that the '685 is  
13 referenced right in the patent, I assume.

14 **MR. NORTON:** Actually, both the '685 and '104 are in  
15 evidence by stipulation.

16 **THE COURT:** But the '104 references the '685 on the  
17 cover, I assume, right?

18 **MR. NORTON:** Exclusively, yes.

19 **THE COURT:** So it is. So there is evidence that  
20 would support that argument.

21 I think it's all a fair argument as long as no  
22 suggestion is made that Chapter 9 enlarges the scope or even  
23 explains it. We will not allow that.

24 **MR. JACOBS:** Again, your Honor, this is a non-issue.  
25 We had no plans, have no plans, have no disclosure, have

1 nothing. There is nothing like that.

2 **THE COURT:** Thank you.

3 Listen, I want to -- you managed to get through this,  
4 but you lawyers ought to disclose the documents that you want  
5 to put in evidence. If you're just going to use it for  
6 impeachment, it doesn't normally come into evidence.

7 So I think -- I ask you to please, otherwise I think  
8 you're trying to sandbag. It's okay to sandbag if it's going  
9 to be true impeachment, but then the document doesn't come into  
10 evidence. You just read from it.

11 And that part will -- the jury will learn about, but  
12 you just read the part where the witness said, "The light was  
13 red."

14 So I ask you to err on the side of disclosure. In my  
15 judgment, all of those documents should have been disclosed to  
16 the other side because they are just standard material that  
17 should go in as part of your case-in-chief.

18 Anything else you want to raise?

19 **MR. JACOBS:** Nothing from us, your Honor.

20 **MR. WEINGAERTNER:** No, your Honor.

21 **THE COURT:** 15 minutes. Thank you.

22 (Whereupon there was a recess in the proceedings  
23 from 9:35 a.m. until 9:53 a.m.)

24 **THE COURT:** Remain seated. May we get back to work  
25 and bring in the jury?

1           **MR. VAN NEST:** Yes, your Honor.

2           **THE COURT:** Dawn, can you get the jury?

3           **THE CLERK:** Sure.

4           **THE COURT:** Please be seated.

5           (Jury enters courtroom at 9:55 a.m.)

6           **THE COURT:** Have a seat, welcome back.

7           Mr. Lindholm, please be seated.

8           **THE COURT:** Now, the cross-examination. But, let's  
9 see. This is Mr. Weingaertner, correct?

10          **MR. WEINGAERTNER:** Yes, your Honor.

11          **THE COURT:** Mr. Weingaertner. It will take awhile  
12 for everyone to remember a new lawyer's name.

13          Mr. Weingaertner, you have the floor.

14          **MR. WEINGAERTNER:** Thank you, your Honor.

15                                   **CROSS EXAMINATION**

16          **BY MR. WEINGAERTNER:**

17          **Q.** Hello, Mr. Lindholm.

18          **A.** Hello.

19          **Q.** I just have a few questions for you.

20                 Earlier Mr. Norton had asked you about some Sun  
21 engineers that had left for Google; do you recall that?

22          **A.** Yes.

23          **Q.** Do you have any reason to believe any of those folks when  
24 they went to Google worked on Android in any way?

25          **A.** I -- I don't -- I didn't track what they did. I know many



1 of them worked on non-Android things, but I can't say  
2 exclusively.

3 Q. But you have no knowledge of them working on Android?

4 A. As I sit here now, no, I don't think of any that did.

5 Q. Can you remind us again of when you joined Google?

6 A. I joined in July of 2005.

7 Q. And what has your technical focus been at Google since you  
8 joined?

9 A. It's been on infrastructure.

10 Q. And just very briefly, what is infrastructure?

11 A. It's the software and practices that allow the big data  
12 centers to work.

13 Q. And what, if anything, has your work at Google had to do  
14 with Java?

15 A. My personal work has not had anything to do with Java.  
16 I've only written a few lines of code, of Java code at all.

17 Q. In the last seven years at Google?

18 A. In the last seven years, yes.

19 Q. And can you explain what, if anything, your work at Google  
20 has had to do with Java Virtual Machines?

21 A. Nothing at all.

22 Q. And what involvement, if any, have you had with Android  
23 design work?

24 A. Oh, no. I haven't -- I haven't been part of any design  
25 work with Android.

1 Q. And so no -- no work involved with the design of the  
2 Dalvik Virtual Machine?

3 A. No, not at all.

4 Q. Any awareness of the details of the design of the machine?

5 A. I don't have any awareness of any of details, no.

6 Q. Did you ever provide any design advice to the Android  
7 team?

8 A. No --

9 THE COURT: These are all the present tense. You're  
10 asking him if he has any awareness now. Isn't it more relevant  
11 to find out if he had awareness then?

12 MR. WEINGAERTNER: No, your Honor, I was trying --

13 THE COURT: I ask you to rephrase those questions.

14 MR. WEINGAERTNER: Okay.

15 BY MR. WEINGAERTNER:

16 Q. I was trying to determine whether the witness had any  
17 involvement ever at any point?

18 A. Okay. In design and architecture, no, I did not have  
19 involvement.

20 Q. Not in 2005?

21 A. I -- no, not in 2005.

22 Q. And not at any time?

23 A. Not at any time.

24 Q. Did you ever make any technical contributions at all to  
25 the Android that's in smart phones today?

1     **A.**     No.

2                 **MR. WEINGAERTNER:**  No further questions, your Honor.

3                 **THE COURT:**  All right.  Any redirect?

4                 **MR. NORTON:**  No, your Honor.

5                 **THE COURT:**  Mr. Lindholm, can he be excused for good?

6                 **MR. NORTON:**  He's on our witness list for Phase 3,  
7 your Honor.

8                 **THE COURT:**  All right.  So you will be called back in  
9 due course, but not yet.  For now you're free to go.

10                Thank you, Mr. Lindholm.  Have a great day.

11                **THE WITNESS:**  Thank you.

12                (Witness excused.)

13                **THE COURT:**  Next witness.

14                **MR. NORTON:**  Oracle calls Robert Vandette.

15                **THE COURT:**  All right.  Let's bring him in.

16                (Brief pause.)

17                **THE COURT:**  All right.  Are you Mr. Vandette?

18                **THE WITNESS:**  Yes, I am.

19                **THE COURT:**  Welcome.  Please raise your right hand.  
20 The clerk will swear you in.

21                                 **ROBERT VANDETTE,**

22 called as a witness for the Plaintiff herein, having been first  
23 duly sworn, was examined and testified as follows:

24                **THE WITNESS:**  I do.

25                **THE CLERK:**  Thank you.  Be seated.

1           **THE COURT:** Thank you. Have a seat.

2           You need to be about this close to the microphone  
3 (indicating). It will move all around. You see how the base  
4 moves? The base will move, too.

5           **THE WITNESS:** Okay. Is this good?

6           **THE COURT:** That's good. Say your name again.

7           **THE WITNESS:** My name is Robert Vandette.

8           **THE COURT:** Spell the last name.

9           **THE WITNESS:** V, as that Victor, A-N-D-E-T-T-E.

10          **THE COURT:** Perfect. Thank you.

11          Go ahead, counsel.

12          **MR. NORTON:** Thank you.

13                           **DIRECT EXAMINATION**

14   **BY MR. NORTON:**

15   **Q.** Good morning, Mr. Vandette.

16   **A.** Good morning.

17   **Q.** Where did you work today?

18   **A.** I work at Oracle.

19   **Q.** And prior to Oracle's acquisition of Sun, where were you  
20 employed?

21   **A.** I was employed at Sun. I have been an employee of Sun  
22 since the years around 1990 and then, you know, joined Oracle  
23 after the acquisition.

24   **Q.** All right. So for over 20 years?

25   **A.** Correct.

1 Q. And in brief, can you describe the nature of the work that  
2 you have done at Sun and then at Oracle?

3 A. Well, for the last 15 years I have been involved in Java  
4 technologies, working on the various Java Virtual Machines  
5 doing, you know, benchmark performance, improvements, additions  
6 to the virtual machine technology.

7 Q. What is your title at Oracle today?

8 A. My title is Consulting Member of the Technical Staff.

9 Q. And in your work at Oracle, to what extent, if at all, do  
10 you have experience with benchmarking?

11 A. I -- over the last 15 years working in Java, I've quite  
12 frequently run benchmarks in order to help to improve the  
13 performance of our own virtual machine technology or to compare  
14 our VM against competitors to ensure that we stay competitive.

15 Q. And can you just explain in brief what benchmarking is?

16 A. Benchmarking is a standard industry practice that is used  
17 to compare two different products. In the virtual machine  
18 technology we use benchmarks, which are tests, little  
19 programs -- or, actually, large collections of Java code, in  
20 order to measure the speed of our virtual machine.

21 Q. Now, in this case have you been asked to do any benchmark  
22 testing with respect to the '104 patent?

23 A. Yes, I have. I was asked to conduct a performance  
24 analysis study to determine the performance benefits that the  
25 '104 patent provides to the Android platform.

1 Q. Now, I want to be clear here. Before we get into the  
2 specifics of your experiments, to what extent, if at all, did  
3 you conduct any experiments to determine whether Android  
4 infringes the '104 patent?

5 A. It was not my objective to determine the infringement  
6 aspect of this. It was primarily to measure the performance  
7 benefit that it provides.

8 Q. Now, to what extent did you have discussions with  
9 Professor John Mitchell about the experiments that you were  
10 conducting?

11 A. I had several phone conversations with Mr. Mitchell, as  
12 well as Dr. Peter Kessler, who helped to provide the  
13 information about the infringing source code in the Dalvik  
14 Virtual Machine.

15 Q. And then just by virtue of those discussions and to orient  
16 ourselves, do you have a general understanding of what the  
17 functionality is in the '104 patent that's at issue here?

18 A. I have a general understanding that involves the symbolic  
19 reference representation being converted to a numerical value.

20 Q. So let's talk about your experiments a little bit.

21 Can you just walk us through step-by-step what you  
22 did in order to test the impact of the '104 invention on  
23 Android?

24 A. Yes. I selected a device which is comparable to Android  
25 cell phones, called the BeagleBoard, which is -- which contains

1 an arm processor. I then configured and built three different  
2 versions of the Dalvik Virtual Machine, which is the program or  
3 the binary that actually contains the '104 patented features.  
4 I built three different versions and ran benchmarks on these  
5 three different versions with different changes applied in  
6 order to compare the difference with and without the patented  
7 features.

8 Q. So in order to conduct your experiment, did you need to  
9 have Android source code?

10 A. Yes, I did.

11 Q. And where did you get that?

12 A. I downloaded the Android source code from the internet  
13 repository that Google provides.

14 Q. And then to what extent did you need to make changes to  
15 that Android source code in order to conduct your experiments?

16 A. I needed to modify two different source files which John  
17 Mitchell and Peter Kessler helped me to identify that were  
18 implementing the '104 patent features. I needed to modify the  
19 two source files in order to disable those features.

20 Q. And do those particular source files have names?

21 A. Yes. The dexopt.c and resolve.c.

22 Q. Now, why did you make changes to those particular files?

23 A. I made changes to those files since they implemented the  
24 patented features. John Mitchell and Peter Kessler helped me  
25 to identify those source code features.

1 Q. Now, when you made your modifications to the Android  
2 source code, to what extent did you limit -- if at all, to what  
3 extent did you limit your modifications to focus on the  
4 specific functionality of Android that you understood was  
5 accused?

6 A. The two features that were discussed with Dr. Mitchell  
7 involved the quickening of bytecodes and SideTables. The  
8 features that I modified only implemented those two very  
9 specific features in the Android Dalvik Virtual Machine.

10 Q. Now, have you ever heard of something called a JIT, J-I-T?

11 A. Yes. A JIT is a Just In Time compiler.

12 Q. And did -- in your experiments did you do anything with  
13 respect to the JIT?

14 A. For the three different runs that I did with the three  
15 different configurations, I ran without the JIT being enabled  
16 in order to focus the performance differences on just those  
17 features that I was disabling or leaving enabled, in the case  
18 of the standard Froyo.

19 Q. Now, was it necessary that you rewrite or modify any code  
20 in order to disable the JIT?

21 A. No, I did not have to modify any code. There is a  
22 standard command line option that Google provides to the  
23 execution of Dalvik which allows you to disable the JIT.

24 Q. Now, you made reference to something called a BeagleBoard?

25 A. Yes.



1 Q. Had you ever used a BeagleBoard before?

2 A. Yes. We regularly use a BeagleBoard to measure and  
3 improve the performance of our own Java embedded products.

4 Q. Was there any reason why you chose the BeagleBoard for  
5 this particular experiment?

6 A. I have had over three or four years' experience working  
7 with this board. We were -- we have a lot of knowledge about  
8 how to install applications and install operating system images  
9 on it, so it was a good board to use from that perspective.

10 It is also well supported from the Texas Instrument  
11 team, and it also has a Linux operating system available for it  
12 for other competitive performance comparisons.

13 Q. Now, does it affect the reliability of your benchmarking  
14 experiment in any way that you used a test board instead of  
15 loading the modified code onto an actual telephone?

16 A. Absolutely not. The board contains the same exact arm  
17 processor, the CUP that is -- that would be in a traditional  
18 cell phone. It has the same -- it has a wireless stack. It  
19 has every peripheral that you would find on a traditional cell  
20 phone and more.

21 So it's, you know, compatible in every way to a cell  
22 phone. So there would be no difference in performance  
23 benchmarks, other than possibly, you know, slightly slower  
24 clock speed on a cell phone rather than the BeagleBoard, but  
25 the relative difference in the results that I've seen would

1 still hold true.

2 Q. Now, what benchmarks did you actually use for your  
3 experiment?

4 A. I selected three different benchmarks. One is called the  
5 CaffeineMark, and the second one was SciMark, and the third one  
6 is a benchmark called kBench.

7 Q. Now, had you used any of those before?

8 A. Absolutely. We regularly use those in measuring the  
9 performance of our own virtual machines.

10 Q. And is there a reason why you decided to use three  
11 benchmarks instead of just one?

12 A. Whenever you're doing benchmarks or analysis like this,  
13 it's always best to have as many data points as possible in  
14 order to give you the best picture of the pre-performance  
15 packet that certain features have.

16 Q. And how many times did you run each benchmark in your  
17 experiment?

18 A. I ran each benchmark 10 times in order to eliminate any  
19 variability in the results.

20 Q. Have you prepared some demonstratives to show your  
21 results?

22 A. Yes, I have. I prepared some charts.

23 MR. NORTON: Can we show, as a demonstrative,  
24 Mr. Vandette's first slide?

25 (Document displayed)

1           **MR. NORTON:** And this is published to the jury.

2           **BY MR. NORTON:**

3           **Q.** Can you explain what this slide shows, please?

4           **A.** Let me just button my glasses on. I'm sorry.

5                   This first slide shows the results of the three  
6 different benchmarks that I mentioned. The orange lines are  
7 the Froyo results, which are the results that I gathered on an  
8 unmodified Android Dalvik Virtual Machine. And the green lines  
9 show the results when I disabled the patented '104 features.

10                   So as you can see from the CaffeineMark results,  
11 where Froyo is 100 percent, the results with -- for the  
12 CaffeineMark show that you only achieve 9.41 percent of the  
13 total performance running that benchmark.

14                   For the SciMark benchmark, you get 75 percent of the  
15 total score. And for the kBenchmark, the right-hand columns,  
16 you only get 7.5 percent.

17           **Q.** So the green columns, what modifications are represented  
18 by the scores in the green columns?

19           **A.** The green columns contain changes for both the dexopt and  
20 resolve.c features.

21           **Q.** And then I think you had built in some additional steps in  
22 this slide. Can you explain what the relationship is here  
23 between the CaffeineMark test in the orange column and the  
24 green column, what that signifies?

25           **A.** Yes. This -- the CaffeineMark scores -- another way to

1 say it rather than you get only nine percent of the total  
2 execution, you could look at it as how many times faster is the  
3 Android platform with the '104 patented features enabled. As  
4 for the CaffeineMark benchmark you get 11 times speed  
5 improvement with the patented features.

6 Q. And did you make a similar feature for kBench?

7 A. Yes. And did I the kBench numbers as well.

8 Q. What is that number?

9 A. This shows that the kBench benchmark's average results  
10 show it's 13 times faster with the '104 features enabled.

11 Q. Now, with kBench in particular, what kind of functionality  
12 or what kind of features is kBench testing?

13 A. KBench is testing several different algorithms that Java  
14 programs or programs in general would use. There are several,  
15 you know, industry standard benchmarks that are included in as  
16 subtests for the kBench benchmark.

17 Q. Is there any kind of an application that would be likely  
18 to have those kinds of functions in it?

19 A. One example. A couple of the subtests, one is called the  
20 Tower of Hanoi. It's where the program is trying to solve a  
21 game or a puzzle and it shows performance that is approximately  
22 the 13 times performance degradation.

23 So if you were to run an Android game, say a chess or  
24 checkers program where you're playing against a computer and it  
25 was the computer's turn to move, it would then take 13 times

1 longer for the move to actually complete without the patented  
2 technology, which would be really significant.

3 Q. Now, in your experience doing benchmarking at Sun and at  
4 Oracle, how would you characterize the significance of these  
5 particular benchmark results?

6 A. As a software engineer at Sun and Oracle over the years,  
7 if I ever came up with a feature that would enhance our virtual  
8 machine by 13 times, I would get a promotion. It's a extremely  
9 significant speed-up.

10 We invest, you know, hundreds and thousands of  
11 dollars, hundreds of man hours and engineering time just to get  
12 five percent performance improvement, let alone 13,000 percent  
13 improvement. So it's extremely significant.

14 Q. Thank you.

15 I think -- did you prepare another slide that shows  
16 us --

17 THE COURT: Did you say 13,000?

18 THE WITNESS: 13 times or 1300 percent. Sorry.

19 THE COURT: 1300?

20 THE WITNESS: I'm sorry.

21 THE COURT: You said 13,000.

22 THE WITNESS: Yes, I'm sorry. I stand corrected.

23 BY MR. NORTON:

24 Q. All right. But 13 times is equivalent to 1300 percent?

25 A. 1300 percent, correct.

1 Q. And then did you prepare another slide to show the effect  
2 of removing only the dexopt functionality?

3 A. Yes, I did. In this particular chart we have added --  
4 I've added an additional column in the center. The green  
5 results are the same that you've seen in the previous slide.

6 The center column shows that if I only remove the  
7 dexopt changes, that there is, you know, 90 percent of the  
8 total performance for the Caffeine benchmark, 97 percent, and  
9 92 percent of the kBench benchmark.

10 So as you can see, the SideTables, which is the third  
11 one, is most significant, but there is still a significant  
12 performance lost due to removing the feature for the quickening  
13 or the dexopt.c changes.

14 Q. Again, in your experience doing benchmark testing at Sun  
15 and at Oracle, if we just focus on the difference between the  
16 blue column and orange column, do you have a view as to the  
17 significance of the differential between those two?

18 A. As you can see from even the CaffeineMark scores, you get  
19 a 10 percent difference in performance.

20 As I mentioned earlier, you know, we invest a lot  
21 just to even get a five percent performance improvement, so  
22 this is still significant.

23 Q. Now, you work for Oracle?

24 A. Yes, I do.

25 Q. Have you been paid anything extra for the work that you

1 have done or the testimony you've given in connection with this  
2 lawsuit?

3 **A.** No, I have not.

4 **Q.** And do you expect to get anything based on the outcome of  
5 the lawsuit?

6 **A.** No, I do not.

7 **Q.** Now, after you did your experiments, did you summarize  
8 them in any kind of a report?

9 **A.** Yes, I did. I provided a report.

10 **Q.** And did you disclose the results that the jury has seen  
11 today?

12 **A.** Yes, I have.

13 **Q.** Did you disclose the code modifications that you had made?

14 **A.** Yes. I believe -- I provided a spreadsheet containing all  
15 of the benchmark results and the benchmark programs have been  
16 provided as well.

17 **Q.** And did you go to a deposition and answer any questions  
18 that Google had about the work that you had done?

19 **A.** Yes. I was deposed on this topic.

20 **MR. NORTON:** No further questions.

21 **THE COURT:** Cross-examination?

22 **MR. KAMBER:** Thank you, your Honor.

23 **CROSS EXAMINATION**

24 **BY MR. KAMBER:**

25 **Q.** Good morning, Mr. Vandette. My name is Matthias Kamber.

1 I'll let you get your water.

2 A. Thanks.

3 Q. You testified that you used code from Google's public  
4 Android website in preparing the bench tests that you did, is  
5 that correct?

6 A. Yes, I did.

7 Q. Not all of the code that you used for your test came from  
8 the Android site though, isn't that correct?

9 A. All of the code that I did provide, did build for the  
10 Dalvik Virtual Machine came from the Google's website.

11 Q. And that's the point I'm trying to make. The code that  
12 you modified for the Dalvik Virtual Machine, you're saying came  
13 from the Google website, correct?

14 A. That's correct.

15 Q. Okay. The other code, all the other code for the files  
16 that you ran on that BeagleBoard test came from somewhere else,  
17 didn't it?

18 A. There was a BeagleBoard distribution that I -- I listed  
19 its source in my report, and that's where I extract -- I got  
20 that build from, yes.

21 Q. So you downloaded it. It was a version of Android 2.2  
22 that was on the Texas Instruments' website, correct?

23 A. Correct.

24 Q. It wasn't from the Google website?

25 A. That's correct.



1 Q. And it had some modifications in that code that Texas  
2 Instruments made so that it could run on that BeagleBoard test  
3 bench, correct?

4 A. The -- it's, the binaries that I downloaded outside of the  
5 Dalvik Virtual Machine came from that website, yes.

6 Q. So you took the code from -- the binaries from that  
7 website from Texas Instruments, correct?

8 A. Right.

9 Q. And then you took the files for the Dalvik Virtual  
10 Machine, the dexopt and the resolve.c files, you took those  
11 from the Android website, correct?

12 A. That's correct.

13 Q. And then you put them together as kind of a Frankenstein,  
14 right?

15 A. It's not a Frankenstein. It's the sources that were used  
16 to build the binary distribution that I ran came from the same  
17 source.

18 Q. The sources that you --

19 A. Developers grab the sources from your website and add  
20 drivers for a specific board hardware, and then build a binary,  
21 and that's the binary that I ran.

22 Q. Are you testifying about what T.I. did?

23 A. I'm testifying in generally how people take Google's  
24 Android sources and build a binary.

25 Q. You don't know what Texas Instruments did to the source

1 code that it got and then developed for its BeagleBoard test  
2 software, correct?

3 A. No.

4 Q. The software that you used for your tests, correct?

5 A. Correct.

6 Q. Now, the tests that you performed were only performed on  
7 that T.I. test bench, the BeagleBoard, correct?

8 A. Correct.

9 Q. You never tested an Android device in a normal  
10 environment, correct?

11 A. For the report that I did, no, but I have since.

12 Q. Okay. But for the report that you did and the analysis  
13 that you disclosed to Google, you didn't test a single one of  
14 the eight phone models that are accused in this case, correct?

15 A. For the report, no.

16 Q. And to the contrary, your benchmark testing that was in  
17 your report focused on the performance of the Dalvik Virtual  
18 Machine itself, right?

19 A. That is the binary that contains the patented feature, so  
20 yes.

21 Q. Your tests weren't meant to provide any understanding of  
22 the performance impact of the functionality on any Android  
23 applications running on a phone, right?

24 A. The benchmarks that I ran were designed to give a  
25 performance characteristic that Android applications would

1 have.

2 Q. Performance characteristic. That's not my question,  
3 Mr. Vandette.

4 My question is: Your tests weren't meant to provide  
5 an understanding of the performance impact of the functionality  
6 on any Android applications, correct?

7 A. It was a goal.

8 Q. It was a goal?

9 A. Right. That is a goal, to give an indication of how  
10 applications would run. So I can't say no, it's definitely  
11 what I was trying to accomplish.

12 Q. Your report was not trying to understand the impact on any  
13 Android applications, was it, sir?

14 A. My report was as stated, running these benchmarks and  
15 giving the results.

16 Q. So, and your report isn't -- and your testimony here today  
17 isn't saying how -- trying to indicate how Android applications  
18 will actually run on the phone, correct?

19 A. The benchmarks will give an indication of how the Android  
20 applications run.

21 Q. You didn't perform any tests on an Android application to  
22 show that it would run 13 times faster, correct, with this  
23 functionality enabled versus being disabled?

24 A. Not for this report, no.

25 Q. The 13 times difference is actually a worst case scenario,

1 wasn't it?

2 **A.** And of course. Of course, the benchmarks that I ran, if  
3 an application used those same techniques, they would achieve  
4 13 times the performance.

5 **Q.** If it was in the virtual machine 100 percent of the time,  
6 correct?

7 **A.** Not always. In any Java application you execute, you  
8 spend some time outside of the virtual machine. So it's not  
9 fair to -- it's not an accurate statement to say "if it's  
10 stated there 100 percent of the time."

11 **Q.** But you were testing only the virtual machine. So your 13  
12 times worst case scenario is if you're purely in the virtual  
13 machine, isn't that correct?

14 **THE COURT:** What is the "you"? What do you mean "you  
15 are in the virtual machine"? As opposed to being where else?

16 **MR. KAMBER:** Thank you, your Honor.

17 **BY MR. KAMBER:**

18 **Q.** If one were running an application on an Android device,  
19 not all of the execution of the application goes through as  
20 interpreted by the virtual machine; isn't that correct,  
21 Mr. Vandette?

22 **A.** That's correct.

23 **Q.** But your testing, your 13 times sort of lack of -- well,  
24 13 times improvement, let's put it that way, is a 13 times  
25 improvement on the processing of bytecodes in the virtual

1 machine itself, correct?

2 A. That's not totally accurate because the 13 times is the  
3 measured result of the benchmarks I executed and I cannot  
4 testify that they spend 100 percent of their time in the  
5 virtual machine. So I can't agree to that question.

6 Q. In fact, you know that they don't spend 100 percent of  
7 their time in the virtual machine, correct?

8 A. Correct.

9 Q. So the impact on an application is something less than  
10 that 13 times, correct?

11 A. These benchmarks that showed 13 times performance do not  
12 necessarily stay in the bytecode -- bytecodes all the time.  
13 So, therefore, they are measuring both bytecode and  
14 non-bytecode performance.

15 If you -- how much do you want me to go beyond?

16 Q. That's fine. I'm going to move on, Mr. Vandette.

17 A. Okay.

18 Q. You talked about the functionality you disabled. There  
19 was dexopt, right?

20 A. Correct.

21 Q. And that is the -- what you characterize as quickening,  
22 correct?

23 A. Correct.

24 Q. That's something that's typically done at install time  
25 when a dex application lands on a device, isn't that correct?

1           **MR. NORTON:** Objection. Scope. Foundation.

2           **THE COURT:** Sustained.

3 **BY MR. KAMBER:**

4 **Q.** You disabled the dexopt functionality in doing your  
5 benchmark testing, correct?

6 **A.** I disabled the quickening aspect of the -- in the dexopt  
7 source file.

8 **Q.** Fair enough.

9           And you also disabled the SideTables' functionality  
10 in the resolve.c code, correct?

11 **A.** Correct.

12 **Q.** In conducting the analysis for your report, did you  
13 personally modify the source code in dexoptimize.c?

14 **A.** In dexopt.c?

15 **Q.** Yes.

16 **A.** Yes, I did. I took changes, put them into a build and  
17 build a Dalvik Virtual Machine.

18 **Q.** And you were told what to modify by Dr. Mitchell, correct,  
19 and Dr. Kessler?

20 **A.** We had discussions to determine the areas that needed to  
21 be modified.

22           Dr. Peter Kessler provided me with some changes in  
23 the form of a DIF, a set of changes that I applied, reviewed  
24 and confirmed that they did, in fact, disable the functionality  
25 we had discussed.

1 Q. I want to talk about the dexopt functionality.

2 MR. KAMBER: And if we could pull up the second of  
3 your demonstrative slides? That's the one with the three  
4 lines.

5 (Document displayed)

6 BY MR. KAMBER:

7 Q. Now, the SideTables but no quickening, the orange bar on  
8 this demonstrative slide, that relates to the technology where  
9 you've only disabled the functionality, the SideTables'  
10 functionality in resolve.c, correct?

11 A. No, that's not correct. The SideTables are disabled only  
12 in the green bars. The center bar is where we have disabled  
13 the dexopt quickening.

14 Q. Excuse me. The dexopt -- I'm a little confused by the  
15 slides. But the orange said SideTables, but no quickening,  
16 correct?

17 A. Correct. That means we have the SideTables implemented,  
18 but we do not perform quickening.

19 Q. Fair enough.

20 And that only showed a small performance improvement,  
21 isn't that correct?

22 A. That's correct.

23 Q. And it was about not even 10 percent on CaffeineMark,  
24 correct?

25 A. Correct.

1 Q. And 2.35 percent on the SciMark composite, correct?

2 A. Correct.

3 Q. And the kBench shows something along the lines of  
4 seven percent, right?

5 A. Correct.

6 Q. You didn't do any tests where you just disabled the  
7 quickening, the dexopt functionality, correct?

8 A. That's what this result is. It's just the quickening  
9 dexopt, the orange bars.

10 Q. This one has SideTables, but not -- you disabled dexopt in  
11 this, correct?

12 A. Correct.

13 Q. Now, in performing your tests, I believe you testified  
14 that you also disabled the JIT, correct?

15 A. That's correct.

16 Q. JIT stands for Just In Time compiler, correct?

17 A. Yes.

18 Q. And you said you were testing for two things. You were  
19 testing for disabling the -- excuse me, the SideTables and the  
20 quickening, correct?

21 A. Correct.

22 Q. That was your control. You wanted to test the base  
23 version of Android against the modifications where you disabled  
24 those two features, correct?

25 A. Correct.



1 Q. So why disable a third feature, the JIT?

2 A. The JIT has dependency on the SideTables. So if the  
3 patented features were disabled, the JIT is not allowed.

4 Q. Okay. In fact, you didn't conduct any tests with the JIT  
5 enabled, correct?

6 A. Not for this patent report, no.

7 Q. Okay. But you understand that the JIT is not accused of  
8 infringing the '104 patent, correct?

9 A. That -- that's -- I don't know one way or the other.

10 Q. You don't know that it is accused of infringing the '104  
11 patent, correct?

12 A. That's correct.

13 Q. Okay. And you would agree that the JIT itself can provide  
14 a rather large performance gain for virtual machines, correct?

15 A. That's correct. But, again, it's based on patented  
16 features that are in the phone and unless you designed a  
17 solution that didn't depend on our patented features, you  
18 cannot enable the JIT.

19 Q. Well, you -- you did some other tests where you actually  
20 disabled the JIT in Java SE, correct?

21 MR. NORTON: Objection. Scope. Foundation.

22 MR. KAMBER: Your Honor, I'm asking the question  
23 because it goes to performance improvements related to the JIT  
24 itself that Mr. Vandette did in other testing.

25 THE COURT: Overruled. You may answer the question.

1 A. I disabled the JIT in order to measure the performance of  
2 the '205 patent.

3 BY MR. KAMBER:

4 Q. You disabled --

5 MR. NORTON: Objection. Move to strike. Your Honor,  
6 can we have a sidebar?

7 MR. KAMBER: Your Honor, I'm not asking about that  
8 patent. I just want to ask a question about Java SE.

9 THE COURT: The witness brought up the '205, counsel.  
10 No, we're not going to have a sidebar.

11 You may continue your examination.

12 BY MR. KAMBER:

13 Q. Mr. Vandette, did you do an analysis where you disabled  
14 the JIT in doing tests on Java SE embedded?

15 A. Yes, I did.

16 Q. And in disabling the JIT in Java SE embedded, did  
17 disabling the JIT itself show a 13 times performance decrease?

18 A. No, it did not.

19 Q. Did not show -- well, let me --

20 A. I don't recall the numbers, but it was not 13 times.

21 Q. Let me show you your report, Mr. Vandette. This is  
22 Exhibit 2807, I believe. Pardon me. This is 2870.

23 MR. KAMBER: May I approach, your Honor?

24 THE COURT: Yes.  
25

1 (Whereupon, document was tendered  
2 to the witness.)

3 **BY MR. KAMBER:**

4 **Q.** And specifically I turn your attention --

5 **A.** What page are we on?

6 **Q.** Page 27, Mr. Vandette, Paragraph 64.

7 Do you see where it says:

8 "The chart above shows that the overall  
9 CaffeineMark benchmark score improves by 13  
10 times when the JIT compiler is enabled in  
11 Java SE embedded."

12 **A.** Okay. Yes, I see that.

13 **Q.** Was that what you found by disabling the JIT alone in your  
14 unless of Java SE embedded?

15 **A.** Yes, it was.

16 **Q.** No further questions, your Honor.

17 **THE COURT:** Let's go to redirect.

18 **REDIRECT EXAMINATION**

19 **BY MR. NORTON:**

20 **Q.** To what extent would it have been good science for you to  
21 leave the JIT enabled when you conducted your experiments?

22 **A.** I was attempting to measure the performance of a specific  
23 feature and if I measured, you know, one aspect with the JIT  
24 and two -- two combinations without the JIT, you wouldn't be  
25 comparing apples to apples. So it would not be good science in

1 order to turn on the JIT for one of the measurements.

2 **Q.** Now, Mr. Kamber asked you some questions about performance  
3 of applications.

4 To the extent an application executes in the Dalvik  
5 Virtual Machine and to the extent that application uses the  
6 functionality tested by the benchmark that you used, can you  
7 reach any conclusion about the effect of disabling the '104 on  
8 the performance of that application?

9 **A.** An application that would run without the '104 being  
10 enabled, according to my benchmark results, show that it would  
11 degrade by 13 percent -- I mean 13 times.

12 **Q.** And then Mr. Kamber asked you some questions about code  
13 from T.I. Do you have any reason to believe that the code for  
14 the BeagleBoard that you used in your experiments had any  
15 effect on the experiments you conducted?

16 **MR. KAMBER:** Objection. Foundation.

17 **THE COURT:** Do you know the answer to that question  
18 one way or the other?

19 **THE WITNESS:** I have some data that I can provide --

20 **THE COURT:** No, no. Do you have personal knowledge  
21 one way or the other?

22 **THE WITNESS:** Would you please repeat the question?

23 **BY MR. NORTON:**

24 **Q.** Sure.

25 Do you have any reason to believe that by using T.I.

1 code --

2           **THE COURT:** No, no. "Reason to believe" calls for  
3 speculation.

4           I'm asking whether or not you had direct first-hand  
5 knowledge for the answer to that question.

6           **MR. NORTON:** I'm not sure Mr. Vandette recalls the  
7 question.

8           **THE WITNESS:** Right. I would like the question  
9 repeated.

10           **THE COURT:** Rephrase the question whether he knows  
11 one way or the other, as opposed to does he have reason to  
12 believe. "Reason to believe" calls for speculation and  
13 opinion. Was he designated as an expert?

14           **MR. NORTON:** Yes, he was. He's an employee expert.  
15 He was disclosed, provided a report, and was deposed on that  
16 basis.

17           **THE COURT:** All right. Well, then I stand corrected.  
18 Then you may ask that question.

19           **MR. NORTON:** Thank you, your Honor.

20 **BY MR. NORTON:**

21 **Q.** So, Mr. Vandette, let me try to make the question a little  
22 better.

23           Mr. Kamber asked you about code other than resolve.c  
24 and dexoptimize.c that you used in your experiments; do you  
25 recall that?

1   **A.**    Yes.

2   **Q.**    Do you have any reason to believe that your use of that  
3   other code in your experiment would undermine the results of  
4   your experiment?

5   **A.**    No, I do not.

6           **MR. NORTON:**  Thank you.

7           **THE COURT:**  Anything more?

8           **MR. KAMBER:**  No, your Honor.

9           **THE COURT:**  May Mr. Vandette be excused without being  
10   recalled?

11           **MR. NORTON:**  Yes, your Honor.

12           **THE COURT:**  "Yes" or "no"?

13           **MR. KAMBER:**  Yes, your Honor.  I believe that's  
14   correct, although Mr. Purcell isn't here to tell us whether we  
15   need him for Phase 3.

16           **THE COURT:**  You either say "yes" or "no."

17           **MR. KAMBER:**  No, your Honor.

18           **THE COURT:**  All right.  You're subject to recall.  
19   We'll let you know when you need to come back.

20           **THE WITNESS:**  Thank you.

21           **THE COURT:**  Thank you.  Have a good day.  Just leave  
22   all those documents here.

23           (Witness excused.)

24           **THE COURT:**  Now, next witness and, please, clear the  
25   decks for the next witness.  It's getting crowded up there.

1 Next witness.

2 MR. NORTON: Oracle calls Noel Poore.

3 THE COURT: All right. Just so I will be aware, was  
4 he -- is he another expert?

5 MR. NORTON: Yes, sir, your Honor. Yes, he is, your  
6 Honor.

7 THE COURT: So designated and everything?

8 MR. NORTON: Yes, your Honor. With a report and a  
9 deposition.

10 THE COURT: Welcome. Please raise your right hand.

11 NOEL POORE,

12 called as a witness for the Plaintiff herein, having been first  
13 duly sworn, was examined and testified as follows:

14 THE WITNESS: I do.

15 THE CLERK: Okay. Thank you.

16 THE COURT: Great. Have a seat.

17 And you need to be about this close (indicating). It  
18 will move closer to you if you want to bring it closer.

19 Why don't you say your name?

20 THE WITNESS: Noel Poore.

21 THE COURT: How do you spell that?

22 THE WITNESS: First name is N-O-E-L. Second name  
23 P-O-O-R-E.

24 THE COURT: Perfect. Go ahead.  
25

**DIRECT EXAMINATION**

**BY MR. NORTON:**

**Q.** Good morning, Mr. Poore.

**A.** Good morning.

**Q.** Where are you currently employed?

**A.** I work for Oracle.

**Q.** And what is your position at Oracle?

**A.** I'm a principal engineer.

**Q.** And before Oracle acquired Sun in 2010, where did you work?

**A.** I worked at Sun.

**Q.** And how long did you work at Sun and Oracle combined?

**A.** I joined Sun in 2007.

**Q.** Before you worked at Sun, what did you do?

**A.** I was vice president of engineering at Savaje Technologies.

**Q.** And can you just tell us what your educational background is, please.

**A.** I have a bachelor of arts and a master's from Cambridge University England, in computer science.

**Q.** Thank you.

Now, so for how many years of your career have you worked as a software engineer?

**A.** Since 1985.

**Q.** And to what extent did your work as a software engineer



1 include Java technology?

2 **A.** I first started working with Java in the late 1990s. And  
3 since 2001, I've worked almost exclusively with Java.

4 **Q.** And to what extent has your work at Oracle and Sun, and  
5 before that at Savaje, included performance testing of  
6 software?

7 **A.** Performance testing has been a very important part of my  
8 roles. Making sure that the products you're working on fulfill  
9 the performance requirements is some -- is very important. So  
10 we always measure that as we're going along.

11 **Q.** And to what extent has your work at Sun/Oracle/Savaje  
12 included the design of performance tests for software?

13 **A.** Yes, that's also an important part of my job. At Savaje  
14 especially, I both directed and personally participated in  
15 designing and developing test suites for our software.

16 **Q.** Now, I wanted to ask you some questions about experiments  
17 you performed in this case.

18 Were you asked to perform any performance testing  
19 with respect to Android and the '520 patent?

20 **A.** I was.

21 **Q.** And before we get into the details of that, to what  
22 extent, if at all, were you conducting experiments to decide --  
23 to determine whether Android infringes the '520 Patent?

24 **A.** I was not asked to form or express any opinion on  
25 infringement.

1 Q. Now, of course, you work at Oracle. You have to say yes  
2 or no.

3 A. Yes.

4 Q. And are you being paid anything extra for the work that  
5 you've done to do performance testing of the '520?

6 A. No.

7 Q. And do you expect to get any compensation based on how  
8 this lawsuit turns out?

9 A. No.

10 Q. Now, let's talk a little bit about your experiment, then.  
11 What exactly were you trying to learn as a result of conducting  
12 some performance testing on the '520?

13 A. I was trying to measure the effect on the size of the  
14 generated dex file, the Android program file, based on whether  
15 the technique that I was told infringed the patent was used or  
16 not.

17 Q. And so we can get some terms down, what's the term that  
18 you were using in your work to describe that technique that's  
19 accused of infringing the '520 Patent?

20 A. I refer to it as an array initialization heuristic.

21 Q. All right. Let's split that up into pieces then.

22 "Heuristic" here, what's that?

23 A. I think another word for heuristic would be rule of thumb.

24 In this case, it's referring to a technique that's  
25 used to simulate the execution of some bytecode.

1 Q. And "bytecode" that's what you referred to a moment ago as  
2 the dex code?

3 A. But in this case, it's simulating the execution of some  
4 Java bytecode.

5 Q. Now, the array, can you explain for us what an array is in  
6 this context?

7 A. An array is a collection of objects with the same data  
8 type. And they're arranged in sequence so you can talk about  
9 the zero element, the first element, the second elements, and  
10 so on.

11 Q. Can you give us an example of what might be one typical  
12 array.

13 A. So if you think about the characters -- the characters and  
14 symbols that you see on a computer keyboard, it's possible that  
15 in text processing you might want to know: Is the character  
16 that I'm dealing with, is it a letter? Is it a punctuation  
17 mark? Is it a number? Is it a symbol?

18 And you could use the character itself as an indexing  
19 to an array to -- that stored that information, is one way of  
20 performing that test.

21 Q. And then the other term you used in describing the  
22 technique you were looking at was "initialization." So we had  
23 array initialization heuristic. What is "initialization" here?

24 A. So sometimes when you're writing an application, then you  
25 know in advance when you're writing the application code

1 what -- what values you're going to need to have in the  
2 elements of an array when the program actually executes, in  
3 which case you can put something into the source code of your  
4 application that will assign initial values to the elements of  
5 the array. And that process is called array initialization.

6 Q. So that was the thing that you wanted to study. And what  
7 was it that you wanted to learn about that thing?

8 A. Uhm, I wanted to learn what was the impact on the size of  
9 the dex file that is generated from the Java code, whether the  
10 heuristic was used or not used.

11 Q. And why do you care about the size of that file?

12 A. Because larger files take more storage. And larger files  
13 tend to -- tend to take more processing.

14 Q. In conducting your experiments, did you have any  
15 discussions, if at all, with Professor John Mitchell?

16 A. I did. I spoke on a number of occasions on the telephone,  
17 with Dr. Mitchell.

18 Q. Before you conducted your experiments, did you discuss  
19 with Professor Mitchell what exactly it was you were going to  
20 do?

21 A. Yeah. We had an initial discussion. He pointed me at  
22 some areas of code I should go look at. And we worked together  
23 to determine some appropriate changes to make to that code to  
24 perform this experiment.

25 Q. Now, to do your experiments, did you need Android code at

1 all?

2 A. I did.

3 Q. And where did you get that code?

4 A. I downloaded that, the source code, from the Internet,  
5 from the -- the Google website, where the publicly-available  
6 source code was held.

7 Q. Was there a particular version of Android that you used?

8 A. Yes. I used the Froyo version of Android, 2.2.

9 Q. So when you went through your experiment then what was the  
10 first thing that you had to do?

11 A. Excuse me.

12 So the first thing that I had to do was to work out  
13 an appropriate modification to the source code of the dx tool,  
14 which is part of Android, in order to allow me to enable or  
15 disable the heuristic.

16 Q. Did you --

17 A. And --

18 Q. I'm sorry. Go on.

19 A. Then I came up with some -- a number of small Java  
20 programs which focused on static array initialization.

21 Q. Let me stop you there.

22 A. Yeah.

23 Q. Did you prepare some demonstratives for your testimony?

24 A. I did.

25 MR. NORTON: I have hard copies. Can I hand those to

1 the witness?

2 **THE COURT:** Of course. Go ahead.

3 (Document displayed.)

4 **MR. NORTON:** So we can publish to the jury  
5 Mr. Vandette's first slide, which is not what I see on the  
6 screen. Thank you.

7 **BY MR. NORTON:**

8 **Q.** So -- I said, "Mr. Vandette." I apologize.

9 Mr. Poore, can you tell us what it is we're looking  
10 at on this first slide?

11 **A.** So this is a slide which shows an extract of the source  
12 code of the dx tool. And the lines that are highlighted in  
13 yellow are the lines that I added to that source code.

14 **Q.** All right. So there are two things in yellow and then  
15 pulled out in boxes.

16 Did you make any changes to the Android source code,  
17 other than those two little boxes?

18 **A.** No.

19 **Q.** So then once you had made those modifications, you said  
20 that you had some Java programs that you wrote?

21 **A.** Yes.

22 **Q.** And what was the purpose of writing those programs?

23 **A.** Uhm, the -- I wrote those programs so that I had programs  
24 that I could process with the DX tool, that really allowed us  
25 to focus in on measuring precisely the impact of -- of the

1 heuristic array initialization.

2 Q. And how many different programs did you write?

3 A. I did a total of 11, I believe.

4 Q. Now, did you use any actual Android applications in your  
5 experiments?

6 A. No, I did not.

7 Q. Is there a reason why you did not?

8 A. Yeah. I wanted to use -- I agree with Dr. Mitchell, the  
9 best way to measure what we were trying to get at was to write  
10 some very specifically-targeted, small applications that only  
11 focused on array initialization.

12 Q. I think you have another slide. Let me ask you some  
13 questions about that. And we may have to walk through this  
14 together.

15 Can you explain what happened when you ran your Java  
16 programs on the modified and the unmodified code?

17 A. Yeah. So the different Java programs that I wrote  
18 contained initialized arrays of different data types and of  
19 different sizes.

20 What's shown on the slide here is the -- the Dalvik  
21 bytecode that is generated for the initialization of a  
22 10-element array.

23 Next slide please.

24 Q. If I can stop you here, first?

25 A. Sure.

1 Q. What we see here, does this reflect output when the '520  
2 is enabled, or when it's disabled?

3 A. This is -- this is showing when the heuristic is not used.

4 Q. And you asked for the next slide. What do we see here?

5 A. So this is the equivalent code that is generated when the  
6 heuristic is used.

7 Q. So what's the difference between what's going on here?

8 A. Next slide, please.

9 So the green -- the lines that are highlighted in  
10 green here show the portion of the -- of the Dalvik bytecode  
11 that's generated when the heuristic is not used.

12 The green lines are the lines that actually  
13 initialize the values in the array.

14 Q. And then when you do use the fill array data  
15 instruction -- fill array data instruction, is that the same  
16 thing as the array initialization heuristic?

17 A. Yes. That's the -- the heuristic. When the heuristic is  
18 used, then -- next slide please -- then you'll see that the  
19 line that's now highlighted in yellow is the only line that's  
20 concerned with the -- of bytecode, Dalvik bytecode, that's  
21 concerned with actually initializing the values in the array.

22 Q. This particular slide we're looking at, is this just for  
23 one of your programs?

24 A. That's correct.

25 Q. And did you --



1 A. Next slide. So -- sorry. Could we go back one, please.

2 Q. Of course, yes.

3 A. So you can see that in this particular example, which is  
4 one example of the 11 small programs that I wrote, then, 25  
5 lines of initialization code were replaced by one line.

6 Q. And did you prepare some results to show what happened  
7 across all of your experiments?

8 A. I did.

9 Q. All right. We'll look at that now.

10 Can you explain here what we're looking at in the box  
11 that's in yellow in particular.

12 A. Sure. So if we look at the first two columns, then those  
13 indicate for the different data types and sizes of array that I  
14 experimented with.

15 The middle two columns here show the size of the  
16 generated dex file, both without the heuristic optimization,  
17 and with the -- with the optimization of the heuristic.

18 And then, finally, the column that is highlighted in  
19 yellow shows how much larger the dex file is when the heuristic  
20 is not used.

21 Q. All right. So when the '520 is not enabled, there are  
22 more bytes in the dex file; is that right?

23 A. That's correct.

24 Q. And that's what you were trying to show -- or are showing  
25 in this particular slide?

1 A. Correct.

2 Q. And then did you do any further display of your results?

3 A. Yes. If we can move to the next slide.

4 Then this slide -- I did a control -- a control  
5 experiment, which was essentially the same program that -- with  
6 no array initialization in it, so that I could actually work  
7 out how much of the dex file was devoted to array  
8 initialization in each case.

9 So this slide, the first two columns are the same.  
10 The middle two columns show how much of the dex file is devoted  
11 to the array and its initialization, both with and without the  
12 use of the heuristic.

13 And then, finally, the column that's highlighted in  
14 yellow shows how much -- how much larger that code is when you  
15 do not use the heuristic.

16 So, you can see from these results that the use of a  
17 heuristic can make the code that's devoted to initializing the  
18 array up to four times smaller.

19 Q. How much smaller?

20 A. Up to four times.

21 Q. All right. And then if we can focus on your first two  
22 columns here, you have something called "array type."

23 To what extent did you test different types of  
24 arrays?

25 A. Uhm, so I tested -- as you can see here, I tested several

1 different data types, just to see what the -- what the impact  
2 of different data types would be on the -- on the use of the  
3 heuristic.

4 **Q.** Then we have a column here called "array size." To what  
5 extent did you test different sizes of arrays?

6 **A.** So you can see I tested different sizes, ranging from, you  
7 know, 10 up to 1,000 elements in the array.

8 **Q.** Now, when we look at the Dalvik bytecode that you were  
9 actually looking at here, when is that bytecode actually  
10 executed?

11 **A.** That is typically executed during application startup.

12 **Q.** So what effect, if any, would the increase in the number  
13 of bytecode instructions have on startup time for an  
14 application?

15 **MR. PAIGE:** Objection, Your Honor. Foundation.

16 **THE COURT:** Do you know the answer to that question?

17 **THE WITNESS:** Uhm, I believe I do. I believe I can  
18 answer that question, yes.

19 **THE COURT:** All right. Overruled.

20 Please answer.

21 **THE WITNESS:** So having -- given the additional  
22 bytecode instructions are generated when the heuristic is not  
23 used, then it seems logical that additional instructions take  
24 longer time for the Dalvik virtual machine to execute; and,  
25 therefore, the processing of the array initialization will be

1 slower.

2 And that effect will be larger for larger arrays, and  
3 cumulative for applications that are using multiple initialized  
4 arrays.

5 **BY MR. NORTON:**

6 **Q.** So are you able to reach some conclusion, based on your  
7 experiments on the effect of -- including the '520 invention,  
8 its effect on application startup time?

9 **MR. PAIGE:** Objection, Your Honor. It's not in his  
10 report.

11 **THE COURT:** Is that in the report?

12 **MR. NORTON:** Paragraph 70 and 76.

13 **THE COURT:** Take a look at that.

14 **MR. NORTON:** 76 is sufficient.

15 **THE COURT:** Do you persist in your objection?

16 **MR. PAIGE:** No, Your Honor.

17 **THE COURT:** All right. Thank you.

18 Go ahead. Answer the question.

19 **THE WITNESS:** Could you please restate the question?

20 **BY MR. NORTON:**

21 **Q.** I'll do my best to get the gist of it.

22 So what is the effect of -- on application startup  
23 time, of omitting the '520 invention from Dalvik?

24 **A.** The effect is that because the virtual machine has to  
25 execute additional instructions, that application startup will

1 be somewhat slowed.

2 Q. Now, the information that you've shown to the jury today,  
3 did you provide a report in which you included that  
4 information?

5 A. I did.

6 Q. All right. And the modifications that you made to the  
7 code, the Android code, did you include that?

8 A. I did.

9 Q. What about the Java programs that you wrote, did you  
10 provide those, as well?

11 A. Yes. The listings of those programs were included in the  
12 report.

13 Q. And did you attend a deposition and answer any questions  
14 Google had about your experiments?

15 A. I did.

16 MR. NORTON: I have no further questions.

17 THE COURT: All right. Cross-examination.

18 MR. PAIGE: Thank you, Your Honor.

19 CROSS EXAMINATION

20 BY MR. PAIGE:

21 Q. Good morning --

22 A. Good morning.

23 Q. -- Mr. Poore. My name is Gene Paige.

24 And I'd like to ask you a few questions about these  
25 experiments you had done. They were done on the Android dx

1 tool, correct?

2 A. That's correct.

3 Q. And the dx tool is used to transform Java bytecode into  
4 Dalvik bytecode, correct?

5 A. That's correct.

6 Q. Now, Java bytecode is not the same as Dalvik bytecode,  
7 correct?

8 A. Correct.

9 Q. The Java virtual machine is a stack-based virtual machine,  
10 correct?

11 A. Yes.

12 Q. And the Dalvik virtual machine is a register-based virtual  
13 machine, correct?

14 A. That's my understanding.

15 Q. So there's a difference in approach between the Java  
16 virtual machine and the Dalvik virtual machine, correct?

17 A. Yes.

18 Q. And part of that difference is that a stack-based virtual  
19 machine will execute instructions by manipulating a stack,  
20 correct?

21 A. Yes.

22 Q. And so the bytecode for a stack-based virtual machine like  
23 the Java virtual machine would not work on a register-based  
24 virtual machine with a Dalvik virtual machine, correct?

25 A. The instructions -- the bytecode instructions are not

1 compatible, that's correct.

2 Q. Now, you testified that you submitted a report to us with  
3 a performance analysis of Android with respect to the '520  
4 Patent, right?

5 A. Correct.

6 Q. And, in particular, your analysis involved making certain  
7 revisions to the source code for the Android dx tool, right?

8 A. Yes.

9 Q. Now, the dx tool is part of the free software developer  
10 kit that anyone can download from the Internet, right?

11 A. I believe that's true, yes.

12 Q. And you, in fact, got it from the Internet yourself?

13 A. I got the source of the dx tool from the Internet, yes.

14 Q. Okay. And when you ran your experiments in the dx tool,  
15 you never actually used the dx tool on an Android device in the  
16 course of preparing your report; did you?

17 A. Uhm, no. I don't believe that would be a normal use of  
18 the dx tool.

19 Q. Right. The dx tool is not intended to be used on an  
20 Android device, is it?

21 A. That's not my -- my understanding is that it's not, that's  
22 correct.

23 Q. The dx tool is designed to run on a desktop or laptop  
24 computer, right?

25 A. Yes.

1 Q. Now, Mr. Poore, you built applications for Android using  
2 the Android SDK in the past; haven't you?

3 A. I have build a small number of applications, yes.

4 Q. In fact, as part of your work for Sun and Oracle, you've  
5 done deep technical work on potential Android-devised products,  
6 as well as applications; haven't you?

7 A. Yes.

8 Q. However, the performance analysis you carried out here,  
9 with respect to the '520 Patent, that didn't involve the sort  
10 of actual Android applications you built in the past; did it?

11 A. Uhm, no.

12 Q. You created the test programs you used for the dx tool in  
13 connection with your report, right? You wrote them yourself?

14 A. Yes.

15 Q. And the programs you created for these tests were not  
16 designed to be typical Android application, were they?

17 A. They were not.

18 Q. In fact, the programs you tested did two things: They  
19 initialized a static array of various sizes, and printed the  
20 words "hello world." Right?

21 A. That's correct.

22 Q. So in order to make the measurements on these arrays plus  
23 "hello world," you changed the source code to enable you to  
24 disable the Android functionality that Android (sic) says  
25 infringes the '520 Patent, right?



1     **A.**     That's correct.

2     **Q.**     And when your modified version of Android is run, such  
3     that it skips over what you are calling the array  
4     initialization heuristic, that doesn't infringe the '520  
5     Patent, right?

6             **MR. NORTON:**   Objection.

7             **THE COURT:**   I'm sorry.   The question is unclear.   Say  
8     it again.   Does or doesn't?   I couldn't hear what you said at  
9     the end.

10            **MR. PAIGE:**   My question is, is it his understanding  
11     that when that array heuristic is disabled, the resulting  
12     software does not infringe the '520 Patent.

13            **MR. NORTON:**   Objection.   Scope.   Foundation.   He is  
14     not an expert on infringement.

15            **MR. PAIGE:**   This is the basis of his report, Your  
16     Honor.

17            **THE COURT:**   You yourself asked questions about if you  
18     put the invention in or you don't put the invention in.   And so  
19     I'm going to allow the question.

20            The jury will understand that it's up to you to  
21     decide what is and is not in the Android device that meets or  
22     does not meet these claim limitations.   But with that  
23     understanding, I'm going to allow this question.

24            So, now everyone has forgotten the question so please  
25     ask it again.

1 (Laughter)

2 **BY MR. PAIGE:**

3 **Q.** When you modified the source code such that it skips over  
4 what you call the array initialization heuristic, the resulting  
5 source code, in your opinion, does not infringe the '520  
6 Patent, correct?

7 **A.** That was the direction that I was given by Dr. Mitchell,  
8 yes.

9 **Q.** Dr. Mitchell told you that if this array initialization  
10 heuristic was removed from the code, it would not be  
11 infringing, correct?

12 **A.** That was the reason for removing that code as part of the  
13 experiment, yes.

14 **MR. PAIGE:** And if we could see slide 1, please.

15 (Document displayed.)

16 **BY MR. PAIGE:**

17 **Q.** So what you did was you skipped over everything -- strike  
18 that.

19 What your code change did was, if "NO\_ARRAY\_OPT" was  
20 set, the code would skip over everything from the words "if  
21 system git end" at the beginning there, down to the end of that  
22 software, right?

23 **A.** That's correct.

24 **THE COURT:** That was before or after the change?

25 **THE WITNESS:** The change was made so that I could --

1 so that I could actually tell the tool, when I was running it,  
2 whether or not I wanted the heuristic to be used.

3 **THE COURT:** Just a minute.

4 What's on the screen there, not counting the blowup  
5 part, but just the typewritten part, is that actual code from  
6 the Dalvik virtual machine?

7 **THE WITNESS:** It's actual code from a tool called dx,  
8 which is not part of the Dalvik virtual machine but is a tool  
9 that is used in the building of Dalvik applications, the  
10 Android applications.

11 **THE COURT:** That code comes from Android?

12 **THE WITNESS:** Correct.

13 **THE COURT:** So the part that you did highlight in  
14 yellow is in the original Android?

15 **THE WITNESS:** The part that I highlight in yellow are  
16 the two lines that I added to the source code to enable me to  
17 enable and disabled -- enable or disable the use of the  
18 heuristic.

19 **THE COURT:** So the part you're calling the heuristic  
20 is everything else on that page?

21 **THE WITNESS:** Is everything else on that page.

22 And, you know, there are other -- there are calls to  
23 other pieces of code that are included in the code that's on  
24 this slide. I didn't include those other pieces of code  
25 because I did not modify those other pieces of code.

1           **THE COURT:** All right. So those two things in red,  
2 you added to do your experiment, true?

3           **THE WITNESS:** Correct.

4           **THE COURT:** And that had the effect of skipping the  
5 rest of that code on that page?

6           **THE WITNESS:** That's correct.

7           **THE COURT:** All right. Thank you.

8           All right. With that clarification, please ask your  
9 question again.

10           **MR. PAIGE:** I'm sorry, Your Honor, I have forgotten  
11 it.

12 **BY MR. PAIGE:**

13 **Q.** But I think that the question might be if you -- your code  
14 was enabled to -- designed to enable you to skip this part or  
15 not skip this part, as you chose, correct?

16 **A.** That's correct.

17 **Q.** And if the "skip this part" was turned on, you would skip  
18 this part of the code, and that was what you said is removing  
19 the array initialization heuristic, correct?

20 **A.** Yes.

21 **Q.** Okay. Now, during your direct examination you spoke a bit  
22 about the effect on file size these modifications have. But as  
23 part of your investigation leading up to your report, you  
24 didn't perform any experiments to directly measure the runtime  
25 performance of disabling the accused functionality, correct?

1 A. That's correct.

2 Q. And you talked a bit about the fact that you think this  
3 would be slower. But you didn't attempt to quantify the impact  
4 on application startup time as part of your report, did you?

5 A. No. I just -- I just used logic to infer that that would  
6 be the case.

7 Q. But you don't know how much slower; do you, sir?

8 A. That's correct.

9 Q. And you also have not tested any hardware running the  
10 Android operating system with respect to the '520 patent,  
11 correct?

12 A. That's correct.

13 Q. And, in fact, you haven't tested any public Android  
14 application on the Android operating system with respect to the  
15 '520 Patent, correct?

16 A. Correct.

17 Q. So let's take a look, please, if we could, at slide number  
18 3.

19 THE COURT: Is that your slide or the other side's  
20 slide?

21 MR. PAIGE: His demonstrative number 3.

22 THE COURT: You all remember these are not in  
23 evidence. They are just demonstratives. None of these numbers  
24 are going to be in the jury room --

25 MR. PAIGE: And let me just --

1           **THE COURT:** -- unless they are otherwise part of this  
2 record.

3           So if any of this is something you want to copy down,  
4 you make notes, I guess. But please remember that  
5 demonstratives don't go into the jury room.

6           Slide 3 is on the screen. Go ahead.

7 **BY MR. PAIGE:**

8 **Q.** Let me just try to understand the size effects you're  
9 talking about.

10           The first row there, that says "no array," that's a  
11 program that just makes the computer print the words "hello  
12 world," right?

13 **A.** Yes. The first row refers to an application which is  
14 identical to all the other applications, except that it does  
15 not include an array, any array at all.

16 **Q.** No array there. And it does nothing more than print the  
17 worlds "hello world"?

18 **A.** That's correct. It's kind of the control for this  
19 experiment.

20 **Q.** And then the remainder of them have various arrays in  
21 there, as well as the printed words "hello world," right?

22           **THE COURT:** In where?

23           **MR. PAIGE:** In the source code he wrote.

24           **THE COURT:** Is that true?

25           **THE WITNESS:** Yes.

1           **THE COURT:** So would you just add to the "hello  
2 world" program an array?

3           **THE WITNESS:** I added an array -- I created various  
4 copies of the program, each of which added to the "hello world"  
5 an array of different size and different data type.

6           **THE COURT:** It wouldn't have anything to do with  
7 "hello world"; it's just an array?

8           **THE WITNESS:** Absolutely, yes.

9 **BY MR. PAIGE:**

10 **Q.** So let me understand the rest of the numbers here. The  
11 third column, "dex with optimization," that's the size of the  
12 array when the allegedly infringing functionality is turned on,  
13 right?

14 **A.** That's the size of the dex file when the heuristic is  
15 used.

16 **Q.** Right. And the fourth column is the size of the dex file  
17 when the allegedly infringing functionality is turned off,  
18 right?

19 **A.** Correct.

20 **Q.** And the fifth column, "bytes added," that's the difference  
21 between the two, right?

22 **A.** Yes.

23 **Q.** So the fifth column tells you how much bigger it gets when  
24 you turn off the array heuristic?

25 **A.** That's right.

1 Q. Okay. And the "array size" column there, that tells you  
2 how big the array is?

3 A. That tells you how many elements the array contains.

4 Q. Okay. So let me focus on the fourth row across, that says  
5 "int 100." That's an array that has a number, 1, 2, 3, 4, 5,  
6 all the way up to 99, 100, correct?

7 A. That's correct.

8 Q. And when the array heuristic is turned off, that gets 748  
9 bytes bigger, right?

10 A. That's what my experiment found, yes.

11 Q. And your experiment also found that a program that just  
12 prints the words "hello world" is 748 bytes in size; didn't it?

13 A. That's correct.

14 Q. So the effect of using this array initialization heuristic  
15 on a array of a hundred units is the same size as a little  
16 program that says "hello world." Isn't that right?

17 A. That's correct.

18 MR. PAIGE: No further questions.

19 THE COURT: Okay. Anything more, Mr. Norton?

20 REDIRECT EXAMINATION

21 BY MR. NORTON:

22 Q. Mr. Paige asked you a couple of questions. One question  
23 had to do with where the dx tool is used. I believe your  
24 testimony is that it's used on the SDK.

25 A. Yes. It's not run on the -- on an Android device. It is



1 used while a developer is building/developing an Android  
2 application so it can run on a desktop or laptop system.

3 Q. Nonetheless, does the presence or absence of the technique  
4 that you were testing, does it have an effect, based on your  
5 experiments, on the performance of the actual handsets?

6 A. So, I did not measure that directly. But logic says that  
7 because the Dalvik virtual machine has to execute more  
8 instructions -- potentially many more instructions -- to  
9 initialize the array, then logic says that it will be slower.

10 Q. All right. And in your experience doing performance  
11 testing and benchmarking, is it necessary to actually run  
12 commercial applications that are out there in the world on  
13 commercial devices that are out there in the world, in order to  
14 be able to draw reliable conclusions about the effect of an  
15 invention or a technique on the performance of a device?

16 A. No.

17 Q. Why not?

18 A. Because by doing targeted experiments and targeted  
19 testing, then you can actually get a much clearer picture of  
20 the effect of the specific thing that you're trying to test.

21 MR. NORTON: Thank you very much. No more questions.

22 RECROSS EXAMINATION

23 BY MR. PAIGE:

24 Q. You just testified it's not necessary to test how things  
25 would actually work in the real world, right?

1 **A.** I testified that it's not always necessary to -- to test  
2 using commercially-available applications in order to validate  
3 the effect of a potential optimization or change that you're  
4 testing.

5 **Q.** You've worked with Java a long time; haven't you, sir?

6 **A.** Yes, I would say --

7 **Q.** Have you ever in your career used a program that consisted  
8 of nothing but an array and an instruction to print "hello  
9 world"?

10 **A.** I've used a variety of very simple applications like that  
11 in order to test -- to do performance and optimization testing  
12 during my career, yes.

13 **Q.** But you never used that in actual real-world devices,  
14 right?

15 **A.** Uhm, no. As I said, this was not designed -- you know,  
16 this was designed to be a very specific application that  
17 allowed us to measure something very specific.

18 **MR. PAIGE:** Thank you.

19 **THE COURT:** May the witness step down?

20 **MR. PAIGE:** Yes, Your Honor.

21 **MR. NORTON:** Yes, Your Honor.

22 **MR. PAIGE:** Subject to recall.

23 **THE COURT:** Mr. Poore, thank you. You are free to  
24 go.

25 **MR. PAIGE:** Subject to recall, Your Honor.

1           **THE COURT:** Oh, subject to recall. We will let you  
2 know if you will be needed. For now, you may leave.

3           Have a great day. Thank you, sir.

4           **THE WITNESS:** Thank you.

5           (Witness steps down.)

6           **THE COURT:** It's time for a 15-minute break. Please  
7 remember the admonition.

8           **THE CLERK:** All rise.

9           (Jury out at 11:09 a.m. )

10          **THE COURT:** All right. Please be seated.

11          The witness left with all the documents that were on  
12 the bench. I think they were all just illustrative.

13          **MR. NORTON:** They were just his demonstratives, yes.

14          **THE COURT:** So maybe there was no harm done. Be  
15 aware that he did leave the courtroom with all that.

16          Anything for the judge to take up?

17          **MR. VAN NEST:** No, Your Honor.

18          **MR. JACOBS:** No, Your Honor.

19          **THE COURT:** Did I hear that you had a witness "sir"  
20 somebody?

21          **MR. VAN NEST:** "Sir"?

22          **THE COURT:** Like in Sir Lawrence Olivia.

23          **MR. VAN NEST:** We can probably get --

24          **THE COURT:** Did I hear that? I thought I heard that  
25 earlier, that -- maybe I misunderstood. That was a couple of

1 days ago. One of you were going to be calling someone who was  
2 knighted, I guess?

3 **MR. NORTON:** The only thing I can think of is, it was  
4 a reference to a Java engineer named Christopher Plummer. But  
5 it's not the same.

6 **THE COURT:** No, no. I heard the word "sir."

7 **MR. VAN NEST:** I hate to disappoint you, Your Honor.  
8 (Laughter)

9 **MR. VAN NEST:** I think we are where we are.

10 **THE COURT:** That's too bad.

11 **MR. VAN NEST:** It might not get any better.

12 **THE COURT:** I would like for you all to just --  
13 whoever is preparing these witnesses, this witness answered the  
14 questions. This witness, I thought, is a model for what a  
15 witness ought to do. Get on the stand, answer the question,  
16 yes, no. Don't quibble. Don't argue. When you've got to  
17 admit something, admit it.

18 I think the jury learned a lot from that witness.  
19 It's up to the jury to decide. But some of these witnesses  
20 come in here and hem and haw, they're evasive. They don't  
21 remember anything except when their friendly lawyer is asking  
22 them questions, then they remember everything.

23 But this witness was very -- was an excellent witness  
24 in terms of at least answering the questions without quibbling.  
25 So I commend that model to all of you.

1 We'll take our 15 minutes now.

2 (Recess taken from 11:12 to 11:29 a.m.)

3 **THE COURT:** All right. Back to work. Please, be  
4 seated. I have a question.

5 I'd like to give each of you -- Dawn, would you hand  
6 each side one of these.

7 I am, in my spare time, working on the other part of  
8 the case. Copyright part of the case. And I would like for  
9 you to take a pencil or something and correct the form of  
10 this -- every single error you can find. This is simply a  
11 little four-line thing to illustrate what a class is and what a  
12 method is, which will eventually find its way into an order, in  
13 due course. But I'm trying to make sure that I get it right,  
14 and I don't want there to be an error. So -- and this is  
15 according to using the Java Language.

16 So if you could each -- is Mr. Barber here?

17 **MR. VAN NEST:** He's not, Your Honor. Mr. Kwun will  
18 be able to do it.

19 **THE COURT:** Somebody on your side surely can do this,  
20 including yourself by now.

21 So you just take a pencil, and you write in what the  
22 mistake is, and give it to me at the end of the hearing. I  
23 would appreciate it. It can be overnight. I don't want you to  
24 take it overnight unless you've just got to. Surely, you  
25 experts can do this by now.

1           **MR. VAN NEST:** We'll try to do it by the end of the  
2 hearing today, by 1:00 o'clock today.

3           **THE COURT:** 1:00 o'clock.

4           All right. Are we ready to go?

5           **MR. JACOBS:** Your Honor, we have an issue we would  
6 like to tee up now and figure out how to resolve it in time for  
7 a witness.

8           **THE COURT:** Fine.

9           **MR. JACOBS:** Exhibit 1127 is a redacted version of  
10 the communication that was delivered to Google at the July 20,  
11 2010 meeting, in which specific patents were identified that  
12 Oracle alleged Google infringed.

13           **THE COURT:** You said it perfectly right. What date?  
14 This is in July of 2010.

15           **MR. JACOBS:** Correct.

16           **THE COURT:** There was a meeting between the two  
17 parties?

18           **MR. JACOBS:** There was a meeting between legal teams.

19           **THE COURT:** Legal teams.

20           **MR. JACOBS:** And Oracle gave this presentation to  
21 Google. And this version of the presentation, with some  
22 redactions that I'll explain, was produced from Google's files.

23           **THE COURT:** All right. So let me see what you have  
24 in mind.

25           I don't see any redactions.

1           **MR. JACOBS:** The redactions, Your Honor, were on the  
2 cover. There were various legends, including "For Settlement  
3 Purposes" and "Rule 408."

4           As we were preparing the slides for my opening, where  
5 I was going to show this document, Mr. Van Nest requested that  
6 that be redacted so that the jury would not be informed that  
7 there was a settlement meeting on July 20; but, otherwise, did  
8 not object to the slide I had sent him, in which a portion of  
9 this document would be shown.

10           The other redaction is on page 9, in which the --  
11 which other patents, which have since been withdrawn from the  
12 lawsuit, are redacted.

13           So those are the redactions from this document.

14           We would like to introduce this document into  
15 evidence as proof of notice and as proof that the notice was  
16 substantive.

17           I understand that Google objects on the grounds -- on  
18 Rule 408 grounds, not on authenticity grounds. I raised that  
19 just before the break because I needed to know whether we need  
20 to bring a witness in. And I'm told that's not the issue; it's  
21 a Rule 408 issue.

22           So I would offer this document into evidence and  
23 elicit whatever objection Mr. Van Nest wishes to make.

24           **THE COURT:** Does the next witness turn on this?

25           **MR. JACOBS:** Not the next one, Your Honor, but

1 perhaps before the next break.

2           **MR. VAN NEST:** Your Honor, I have -- when you're  
3 ready, let me know.

4           **THE COURT:** Go ahead.

5           **MR. VAN NEST:** I'm sorry. I have two objections.  
6 One is 408, and one is 403.

7           This document was marked by them. I had the original  
8 trial exhibit, which is replete with "Confidential & Privileged  
9 - For Settlement Purposes Only, Rule 408."

10           This document was prepared by Oracle --

11           **THE COURT:** Could I see the original.

12           **MR. VAN NEST:** You can. And I need to make sure, has  
13 the original of this been redacted as well, Gary; or do we  
14 know? The cover sheet.

15           I'm not sure. In any event, you can thumb through  
16 it, Your Honor, and you'll see what's inside. There are -- I  
17 believe there was such a notice on the cover, as well, but I'm  
18 not sure.

19           **MR. JACOBS:** There was, Your Honor.

20           **MR. VAN NEST:** So the cover of that (unintelligible)  
21 but every page inside it says, "Confidential & Privileged - For  
22 Settlement Purposes Only."

23           So this documents was prepared by Oracle. It was  
24 prepared for a settlement meeting. They marked it "Settlement  
25 Purposes Only."



1           It's got all sorts of information that's completely  
2 irrelevant now. I mean, they've got pages in here about how  
3 many patents they own. Sort of an opening argument about how  
4 great Java is.

5           If you look at page 5, 10,000 issued U.S. patents.  
6 5,000 patents worldwide. 2,000 Java patents. It's just  
7 replete with stuff.

8           And, as an alternative, I've said we'll stipulate  
9 that we had notice of the two patents at issue as of July 10,  
10 or whatever the date of this thing is. July 20, 2010, we'll  
11 stipulate.

12           They keep telling me, It's only being offered to show  
13 that you had notice of the two patents.

14           Now, the notice that this provides is as of July 20.  
15 And we've said we'll stipulate to that. There is no reason to  
16 throw this thing into evidence. And/or you can ask Mr. Rubin  
17 did he attend the meeting on 2010.

18           I mean, but -- but to put in a settlement document  
19 that's sort of like a second opening statement or a second  
20 closing argument, with all this unrelated stuff about how great  
21 Java is and what they've done, and -- and then, of course, now,  
22 that they sued on seven and only have two left, that's the one  
23 page they want to redact. I mean, that's -- that's the one  
24 page they take out.

25           So this thing should go out on 408 and 403. And I,

1 again, have repeatedly said if the point is, "Did you get  
2 notice of these two patents on that date?" yes, we did. We'll  
3 stipulate to that.

4 **THE COURT:** Why isn't that good enough?

5 **MR. JACOBS:** If it was that simple and clean, Your  
6 Honor, it would be. The form of the stipulation we have gotten  
7 back from Google, as we've talked about a stipulation, has had  
8 spin on it that has been unhelpful.

9 **THE COURT:** Well, how about the way that it was just  
10 phrased?

11 **MR. VAN NEST:** Yeah.

12 **MR. JACOBS:** Just a second.

13 If Google will stipulate that on July 20 they  
14 received notice -- I'm not sure the jury is going to know what  
15 "notice" means. On July 20th, Google was told by Oracle that  
16 Oracle believed Google infringed the '104 and '520 patents, in  
17 a meeting held between the patents, that would be sufficient.

18 **MR. VAN NEST:** Done.

19 **THE COURT:** All right. The court reporter will read  
20 back slowly what was said.

21 (The court reporter responds to the judge.)

22 **MR. VAN NEST:** We can do it again, Your Honor. Not a  
23 big deal.

24 **THE COURT:** Say it slowly.

25 **MR. JACOBS:** On July 20, 2010, Oracle told Google

1 that Oracle believed Google was infringing --

2           **THE COURT:** How can I write that fast? "On July 20,  
3 2010, Oracle told Google that" ...

4           **MR. JACOBS:** ... Oracle believed Google was  
5 infringing the '104 and '520 patents, in a meeting held between  
6 the two companies.

7           **MR. VAN NEST:** What's the date? July 20 of 2010. Do  
8 you have that date, Your Honor?

9           **THE COURT:** Yes. I'm going to read back.  
10 "On July 20, 2010, Oracle told Google that  
11 Oracle believed Google was infringing the  
12 '104 and '520 Patents, in a meeting held  
13 between the two companies."

14           **MR. VAN NEST:** Period.

15           **THE COURT:** Period.

16           **MR. VAN NEST:** Full stop.

17           **THE COURT:** Agreed?

18           **MR. JACOBS:** Agreed, Your Honor.

19           **THE COURT:** All right.

20           **MR. JACOBS:** And then I would propose that --

21           **MR. VAN NEST:** And the quid for the quo is, this  
22 doesn't come into evidence.

23           **THE COURT:** That's what I understood.

24           **MR. JACOBS:** That's what I understood, Your Honor.

25           **THE COURT:** All right. 1127 is out.

1           **MR. JACOBS:** And would the Court entertain a request  
2 to read that to the jury?

3           **THE COURT:** I'll give that to them as soon as they  
4 come back in.

5           **MR. JACOBS:** Great.

6           **THE COURT:** All right. So are we now ready to bring  
7 in the jury? Are we now ready to bring in the jury? Yes?

8           (Jury enters at 11:40 a.m.)

9           **THE COURT:** Please, be seated.

10           I'm going to now read to you a stipulation that the  
11 lawyers reached during the break, to move things along quicker.  
12 And then I will ask both sides if they stipulate. I'll read it  
13 to you once slowly, and then once a little faster.

14           "On July 20, 2010, Oracle told Google that  
15 Oracle believed Google was infringing the  
16 '104 and '520 patents, in a meeting held  
17 between the two companies." Period.

18           Agreed?

19           **MR. JACOBS:** Agreed, Your Honor.

20           **MR. VAN NEST:** Agreed, Your Honor.

21           **THE COURT:** Both sides have stipulated, so that's now  
22 evidence in the case. I'll read it one more time.

23           "On July 20, 2010, Oracle told Google that  
24 Oracle believed Google was infringing the  
25 '104 and '520 Patents, in a meeting held

1           between the two companies."

2           Period. End of story.

3           Next witness.

4           **MR. JACOBS:** Oracle calls Rafael Camargo by video.

5           There are two exhibits referred to in this

6 deposition. They are referred to in the deposition as PX230

7 and PX235. 230 is Trial Exhibit 749. It's been admitted. And

8 235 is Trial Exhibit 753, which has been admitted.

9           **THE COURT:** All right. Is it ready to roll?

10          **MR. JACOBS:** It's ready to roll.

11          **THE COURT:** Give the jury a heads up, how long will  
12 this be?

13          **MR. JACOBS:** I think 11 minutes, Your Honor.

14          **THE COURT:** Eleven minutes.

15          All right. So you all remember the ground rules  
16 about a deposition. I don't need to repeat anything more than  
17 it is testimony under oath. It counts just as much as  
18 testimony here in court. But it's always up to you to decide  
19 how much weight to give to any testimony.

20          Please roll the tape.

21 **WHEREUPON:**

22                               **RAFAEL CAMARGO,**

23 called as a witness for the Plaintiff herein, testified via

24 videotaped deposition played in open court in the presence and

25 hearing of the jury.

1 (Time noted: 11:42 to 11:53 a.m.)

2 **MR. JACOBS:** That concludes that testimony, Your  
3 Honor.

4 1125 is the record of the deposition that was played,  
5 and has the time allocation between the two parties.

6 **THE COURT:** May I see that time allocation?

7 All right. You may call your next witness.

8 **MR. JACOBS:** At this time, Your Honor, I would like  
9 to read some requests for admission and admissions. These have  
10 been discussed with Google.

11 **THE COURT:** Before you do that, where can I find the  
12 time allocation? Is it 50/50?

13 **MR. VAN NEST:** No.

14 **THE COURT:** Give me a rough idea because I need to  
15 allocate the 12 minutes that was spent on that deposition.

16 **MR. JACOBS:** Your Honor, I thought it was on there,  
17 and it isn't. We'll get you the times.

18 **THE COURT:** All right. Who is your next witness?

19 **MR. JACOBS:** I would like to read some Requests for  
20 Admission, Your Honor.

21 **THE COURT:** Now, remember what request for admission  
22 is. I'll remind you. Before the trial starts, the lawyers  
23 have the right to do investigation.

24 Of course, they can investigate on their own. But  
25 the Court has rules that provide for formal ways to do

1 investigation. And one of those is to ask -- ask the other  
2 side to admit something, for example, to admit that they have  
3 so many employees, or whatever they might want to have  
4 admitted. And then the other side has a limited amount of time  
5 in which to respond, a deadline. And they either said deny or  
6 admit. Sometimes they say admit with a slight qualification.  
7 But when that is admitted, or to the extent it is admitted, it  
8 becomes evidence in the case.

9           So at this time we're going to hear some of these  
10 that were propounded, I guess, from Oracle to Google. And they  
11 will be deemed to be evidence in the case. We'll take them one  
12 at a time. So why don't you do the first one. We'll see how  
13 it goes.

14           Counsel, I am going to assume it's been read exactly  
15 correctly, unless you object. So please be reading along to  
16 make sure it is read exactly.

17           Go ahead, counsel.

18           **MR. JACOBS:** (As read:)

19           "Admit that Google develops applications for  
20 Android in the United States."

21           "Google admits that it develops certain  
22 Google mobile applications for phones that  
23 run on the Android operating system in the  
24 United States."

25           "Admit that Google uses Dalvik distributed

1 through <http://android.git.kernel.org> to  
2 execute applications on Android devices in  
3 the United States."

4 "Google admits that an employee has used a  
5 compiled version of source code for the  
6 Dalvik virtual machine included in the  
7 Android source code available at  
8 [android.git.kernel.org](http://android.git.kernel.org) in the United States  
9 to run applications on a device running a  
10 compiled version of the Android source code  
11 available at [android.git.kernel.org](http://android.git.kernel.org)."

12 "Admit that Google provides at least some of  
13 its employees with Android devices for use in  
14 developing and testing applications in the  
15 United States."

16 "Google admits that Google provides at least  
17 some of its employees with devices running a  
18 compiled version of the Android source code  
19 available at [android.git.kernel.org](http://android.git.kernel.org) for  
20 developing and testing certain applications  
21 in the United States."

22 "Admit that Google owns  
23 <http://developer.android.com>."

24 "Google admits that Google Inc. is the  
25 registrant of record for



1 http://developer.android.com."

2 "Admit that Google sold Nexus One devices in  
3 the United States."

4 "Google admits that it sold Nexus One devices  
5 in the United States."

6 "Admit that Nexus S devices sold runs Android  
7 2.3 (Gingerbread)."

8 "Google admits that Nexus S devices have been  
9 sold with Android 2.3 (Gingerbread)."

10 "Admit that Nexus S devices sold in the  
11 United States contain the Android 2.3  
12 (Gingerbread) source code distributed through  
13 http://android.git.kernel.org."

14 "Google admits that Nexus S devices sold in  
15 the United States contain a version of the  
16 Android 2.3 Gingerbread source code made  
17 available through  
18 http://android.git.kernel.org."

19 "Admit that Dalvik is the virtual machine  
20 used in the SDK."

21 "Google denies this request, except with  
22 respect to the emulator."

23 These requests for admissions, as read, are contained  
24 in Exhibit 1111.

25 **THE COURT:** All right. All of that is evidence in

1 the case to the extent admitted.

2 Next.

3 **MR. JACOBS:** Our time calculation on Camargo, Your  
4 Honor, is, for Oracle 9 minutes, 10 seconds. And for Google, 2  
5 minutes, 20 seconds.

6 **THE COURT:** Well, I'm going to say 9 and 3.

7 **MR. VAN NEST:** Two minutes and 1 second, Your Honor.  
8 You're going to round that to 3?

9 **THE COURT:** I'm rounding that to 3 --

10 (Laughter)

11 **THE COURT:** -- because it comes out to 12 minutes on  
12 my calculator. And I don't want to get into half minutes. So  
13 we're going to go 9 and 3. And next time I'll shave a little  
14 off of Google's --

15 (Laughter)

16 **MR. VAN NEST:** I'll be waiting.

17 **THE COURT:** You'll be waiting.

18 Next.

19 **MR. JACOBS:** Your Honor, we now call Daniel Morrill  
20 by video deposition. No exhibits will be -- will be referred  
21 to in this testimony. This is at 1126, for the record.

22 **THE COURT:** Roughly how long is this going to be?

23 **MR. JACOBS:** Thirteen minutes, Your Honor.

24 **THE COURT:** All right. Please roll the tape.

25

1 **WHEREUPON:**

2 **DANIEL MORRILL,**  
3 called as a witness for the Plaintiff herein, testified via  
4 videotaped deposition played in open court in the presence and  
5 hearing of the jury.

6 (Time noted: 12:00 to 12:13 p.m.)

7 **MR. JACOBS:** That concludes that.

8 **THE COURT:** All right. I have a suggestion for you  
9 all. I want you to each take one minute and explain to the  
10 jury the significance of these other companies that we're now  
11 hearing about, like Motorola and so forth. Because everyone  
12 knows that Motorola is not a defendant in the room, and I think  
13 to help clear up confusion it would be worth taking one minute,  
14 each side, to explain what the significance of it is, and also  
15 what the jury -- you want them to be listening for when these  
16 other companies' names are called out.

17 Mr. Jacobs, you get to go first.

18 **MR. JACOBS:** You may recall from my opening, I  
19 explained that we were alleging infringement by Google. That  
20 was the testimony that you just heard about the dog food  
21 program. What Google does internally using its phones and  
22 testing them out, and testing the applications they write, and  
23 writing those applications.

24 The second part of our claim is that Google is  
25 indirectly infringing or inducing infringement or contributing

1 to infringement by its OEM partners. You heard that phrase  
2 used in the last round of testimony.

3 So Google puts the code out there. The OEMs install  
4 it. Our contention is that they are -- they are infringing,  
5 but we're holding Google responsible for that infringement  
6 because they put the code out there, and they have the  
7 relationships with these partners.

8 The phones that you'll hear about -- you'll hear  
9 about the companies and you'll hear about some specific phones.

10 Google had some phones called the Nexus One and the  
11 Nexus S. The Google Nexus One and Nexus S, Google sold.

12 Then there's an HTC phone called the Evo. There's a  
13 Droid by HTC. There's a G2 by HTC. There's a Droid by  
14 Motorola. There's a Captivate by Samsung. And then there's a  
15 Nexus S and Nexus One, not sold by Google. And there -- and  
16 that should be it.

17 So you'll hear about the companies. You'll hear  
18 about some specific phone models. And those phone models are  
19 the ones that we have in the lawsuit as the phones that install  
20 Android and represent the claim against Google for indirect  
21 infringement.

22 **THE COURT:** Mr. Van Nest, would you like to explain?

23 **MR. VAN NEST:** I would, Your Honor. Thank you. Just  
24 very briefly.

25 Obviously, there needs to be proof of infringement

1 before anything else happens. We haven't seen any Android code  
2 yet. And there would need to be proof of infringement.

3 Their claim is that because Android is made available  
4 to these other companies, Google should be responsible for what  
5 they do.

6 So there's going to be a lot of testimony from our  
7 engineers and experts on the main issue in the case coming up,  
8 which is whether or not Android uses either of the features of  
9 the '104 or the '520 patents.

10 With respect to these third-party developers -- I  
11 think you're going to hear from another Google witness in just  
12 a minute -- these are handset partners because Google makes  
13 Android open and free, and it's an open platform. They can  
14 take it. They can change it. They don't have to tell Google  
15 what they do. They don't have to tell Google what changes they  
16 make. They just have to pass a test that says, at a high level  
17 you perform to certain performance standards.

18 But nobody at Google is looking at the source code in  
19 these devices and figuring out how it works, what it does, how  
20 it doesn't work.

21 So that's the point. From our standpoint, we make  
22 the platform available. Google stands behind it. We don't  
23 think it infringes. But we don't know exactly how our partners  
24 use it. They pass these high-level tests called the CTS, which  
25 just mean they can perform at certain minimal levels. Nobody

1 is looking at their source code. Nobody is looking at that.

2 Now, they could have gone and gotten evidence from  
3 those companies and brought them in here; Samsung, HTC. And  
4 you could -- most of the time they would actually be looking at  
5 that code. That didn't happen here.

6 I can't explain why that is, but that code from  
7 Motorola, HTC. It exists out there, but Oracle didn't go out  
8 and get it and present it. So they are trying to suggest it's  
9 all just the same as Android. We don't know that because we  
10 don't know exactly how these folks changed code because they  
11 are not required to tell us that. It's an open platform. It's  
12 an open standard. They can make changes.

13 And you did hear from Mr. Camargo and Mr. Morrill  
14 that they do make changes. Everybody has got their own user  
15 interface. Samsung has one. HTC has one. They all make  
16 changes to put other features on. Sprint wants you to put a  
17 different phone -- different camera on, so you make that  
18 change.

19 So there are lots of changes done because, as we all  
20 know, a Samsung phone is not the same as a Motorola phone, is  
21 not the same as an HTC phone. Those guys are all competing.  
22 They use the same Android platform. They modify. They change  
23 it. They make it their own and they compete with each other.

24 **THE COURT:** That's about two minutes.

25 **MR. JACOBS:** May I --

1           **THE COURT:** I will give you a choice. We will either  
2 call it even on me giving him more time awhile ago or I will  
3 give you 30 seconds response.

4           **MR. JACOBS:** I'll just take 30 seconds.

5           **THE COURT:** All right. Thirty seconds. So I still  
6 owe Google thirty seconds of time.

7           **MR. JACOBS:** So the key language in that was we stand  
8 by it. That's what we're asking you to do.

9           Of course, we'll be getting to the infringement  
10 evidence. We wanted to set up the case for you and give you a  
11 sense of what the infringement is and then we'll get into the  
12 details of the technology tomorrow.

13           The companies in question, you did hear about  
14 changes, but you also heard about the absence of changes to the  
15 components that are at issue in the patent phase of the case.

16           So you heard Mr. Camargo say, We didn't change the  
17 dx tool, and we didn't change Dalvik, and there is no reason to  
18 believe that anybody has changed the dx tool or Dalvik. Those  
19 aren't the skin. Those aren't the user interface.

20           Thank you, your Honor.

21           **THE COURT:** All right. Thank you. I think it helps,  
22 I think that helps put the issue in sharper perspective.

23           Next witness.

24           **MR. JACOBS:** Call Patrick Brady.

25           **THE COURT:** Are you Mr. Brady?

1           **THE WITNESS:** I am indeed.

2           **THE COURT:** Okay. Please stand over there and raise  
3 your right hand.

4                           **PATRICK BRADY,**  
5 called as a witness for the Plaintiff herein, having been first  
6 duly sworn, was examined and testified as follows:

7           **THE WITNESS:** I do.

8           **THE CLERK:** Okay. Thank you.

9           **THE COURT:** Mr. Brady, welcome again. Please sit.  
10 This microphone moves all around. You've got to be this close  
11 (indicating) or otherwise we won't hear you very well.

12           **THE WITNESS:** Testing.

13           **THE COURT:** That's good. You can move it back. It  
14 will move backwards. No, towards you.

15           **THE WITNESS:** Thought so.

16           **THE COURT:** Say your name.

17           **THE WITNESS:** Patrick Brady.

18           **THE COURT:** That's good.

19           Go ahead, counsel.

20                           **DIRECT EXAMINATION**

21 **BY MR. JACOBS:**

22 **Q.** Mr. Brady, you have been working at Google since 2007, is  
23 that correct?

24 **A.** Since 2005 actually.

25 **Q.** Sorry. You got going on the Android project in 2007, is



1 that correct?

2 A. That is correct.

3 Q. And your job at Android is to maintain relationships with  
4 OEM partners, is that correct?

5 A. That is correct.

6 Q. In fact, you have a group called the Partner Solutions  
7 Group, right?

8 A. No. The group has been renamed, but at one time it was  
9 called the Partner Solutions Organization.

10 Q. Today is it called the Android Partner Engineering Team?

11 A. It is.

12 Q. And your title is Director of Android Partner Engineering?

13 A. It is.

14 Q. You have had that title since May of 2011?

15 A. Yes, that's correct.

16 Q. Now, I'd like to show you Exhibit 749, which has been  
17 admitted.

18 (Document displayed)

19 Q. I have a binder copy of this one for you, Mr. Brady, but  
20 you can also look at the one on the screen.

21 (Whereupon, document was tendered  
22 to the witness.)

23 A. Thank you.

24 Q. Now, this is the -- this document is called the Android  
25 Compatibility Definition document, correct?

1 A. That is correct.

2 Q. So let's look at Page 3 of this document, please.

3 (Document displayed)

4 Q. And it says:

5 "To be considered compatible with Android 2.2  
6 device implementations must meet the  
7 requirements presented in this compatibility  
8 definition."

9 Correct?

10 And you can see on the screen where we have  
11 highlighted, if that will help.

12 A. Ah, thank you. Yes.

13 Q. And in addition, the device must pass the most recent  
14 version of the Android Compatibility Test Suite, correct?

15 A. The most recent version for the applicable Android  
16 platform release.

17 Q. So each release would have its own updated set of tests,  
18 correct?

19 A. Correct. So Android 2.2 has a version of this, because  
20 for Android 2.2. Android 2.3 has a different version and so  
21 on.

22 Q. So if we look quickly at Exhibit 751, we will see an  
23 Android 2.3 Compatibility Definition, correct? You can see  
24 that on the screen.

25 A. That is correct.

1 Q. Okay. Now, there is a set of performance requirements in  
2 the compatibility definition document, correct?

3 A. That is correct.

4 Q. And, in fact, if you turn to Page 17, can you read aloud  
5 for us the Section nine called "Performance Compatibility"?

6 A. Sure. Section 9, "Performance Compatibility."

7 "One of the goals of the Android  
8 compatibility program is to enable consistent  
9 application experience to consumers.  
10 Compatible implementations must ensure not  
11 only that applications simply run correctly  
12 on the device, but that they do so with  
13 reasonable performance and overall good user  
14 experience. Device implementations must meet  
15 the key performance metrics of an Android 2.2  
16 compatible device defined in the table  
17 below."

18 Q. And then if you go --

19 MR. JACOBS: I'm sorry, Mr. Lee. We're back on 749.

20 (Document displayed)

21 BY MR. JACOBS:

22 Q. And then if you look at the bottom of that page and the  
23 top of the next page, there are some specific technical  
24 requirements set forth in order for what a device must do in  
25 order to meet the compatibility definition, correct?

1 A. Correct.

2 Q. And so Google cares how quickly these various applications  
3 on an Android phone launch, correct?

4 A. Well, I think in general we believe that application  
5 developers care and so, by proxy, Google cares.

6 Q. And that's because application developers will complain if  
7 their applications run too slowly on the Android devices,  
8 correct?

9 A. Correct.

10 Q. And the application might get low ratings on the Android  
11 store if it runs too slowly, correct?

12 A. Correct.

13 Q. And, in fact, the customers might return the application  
14 if it doesn't run very well on the Android device, correct?

15 A. That's one possible outcome, correct.

16 Q. In fact, if that happens, then your developers might stop  
17 writing -- might stop writing applications for Android,  
18 correct?

19 A. They might.

20 Q. And it's --

21 A. It's possible.

22 Q. And it's important to Google that you have developers out  
23 there in the community or, as we have talked about it in this  
24 trial, the ecosystem in order to make Android successful,  
25 correct?

1 A. Correct.

2 Q. Now, there's another performance requirement for  
3 simultaneous applications, correct?

4 A. That is correct.

5 Q. And that refers to situations where a user has multiple  
6 applications running at the same time, correct?

7 A. That is correct.

8 Q. And, again, there's a standard that has to be met in order  
9 for the compatibility definition to be satisfied, correct?

10 A. That is correct.

11 Q. Now, there's also a document called a "Compatibility Test  
12 Suite Framework," right?

13 A. I don't believe there is a document with that name. There  
14 is perhaps a user manual with that name, or a -- sorry, a  
15 document with the name "Compatibility Test Suite User Manual."

16 Q. And do you have responsibility -- that's a manual for the  
17 Compatibility Test Suite, correct?

18 A. That is correct.

19 Q. And you're responsible for that test suite?

20 A. My team is responsible for the releases of that test  
21 suite, yes.

22 Q. And are there requirements in the CDD that are not tested  
23 by the Compatibility Test Suite?

24 A. Yes, there are.

25 Q. And there are things that are tested by the Compatibility

1 Test Suite that are not listed in the CDD, correct?

2 A. There are things that may not be specifically called out  
3 in the CDD. For example, we test specific API implementations  
4 without, you know, listing every single API in the CDD.

5 Q. But OEMs, the companies like Samsung and others creating  
6 Android phones, they have to satisfy both the Compatibility  
7 Test Suite and the CDD, correct?

8 A. That is correct.

9 Q. And you receive reports from manufacturers about their  
10 passage of the CTS, correct?

11 A. That is correct.

12 Q. And that's part of the routine operation of the, kind of,  
13 "how do we keep Android compatible side of your work," correct?

14 A. That is correct.

15 Q. Let's talk about the Nexus S. Now, the Nexus S was  
16 actually a joint project between Google and Samsung, correct?

17 A. Correct.

18 Q. In the Nexus S was what you at Google called a lead device  
19 for a specific version of Android, correct?

20 A. It goes by many names, but a lead device would be one name  
21 to describe it, yes.

22 Q. And Google wrote the bulk of the software that was  
23 installed on that device, correct?

24 A. The bulk of the Android Platform software, yes.

25 Q. Including Dalvik and the dx tool, that was prepared by

1 Google for installation on that 2005, correct?

2 A. I don't believe the dx tool was installed on the device,  
3 but, yes.

4 Q. It's all right, because dx tool runs on the developer  
5 computer, correct?

6 A. Correct.

7 Q. So Dalvik with dexopt was installed on that device,  
8 correct?

9 A. Dalvik was installed on that device, yes.

10 Q. Now, there was also a version of the Motorola -- the  
11 Motorola Droid was another phone that Google actually worked  
12 on, correct?

13 A. That is correct.

14 Q. And the Android platform was installed on the Motorola  
15 Droid?

16 A. A version of the Android Platform was installed on Droid,  
17 yes.

18 Q. And Google wrote the bulk of the software for that,  
19 correct?

20 A. Yes. I would say that Google wrote most of the software  
21 for that particular Android Platform release.

22 Q. And now what release of Android was that the lead -- a  
23 lead device for?

24 A. That would be -- the Motorola Android?

25 Q. Yes.

1 A. For Android 2.0.

2 Q. And for the Nexus S, which version?

3 A. Nexus S was for Android 2.3.

4 Q. And then that brings us to the Nexus One. What was the  
5 Nexus One a lead device for?

6 A. Android 2.1.

7 Q. Which is called Eclair?

8 A. Well, both Android 2.0 and 2.1 were both code named  
9 Eclair.

10 Q. I want to show you an email that I don't think you have  
11 seen from us before, so take a minute. This is 347.

12 (Whereupon, document was tendered  
13 to the witness.)

14 Q. Is 347 an email you sent?

15 A. It appears to be, yes.

16 MR. JACOBS: Offer into evidence.

17 MR. WEINGAERTNER: No objection.

18 THE COURT: Thank you. Received in evidence.

19 (Trial Exhibit 347 received  
20 in evidence)

21 BY MR. JACOBS:

22 Q. In working with Android manufacturers, you and your team  
23 encourages the manufacturers to use the upstream source code  
24 for Android, isn't it true?

25 A. No. I don't think that's true.



1 Q. Are there specific portions of the upstream code base that  
2 you encourage your OEMs to use?

3 A. I think for some of the more complicated parts of the  
4 system, where sometimes OEMs will make changes that will cause  
5 a lot of problems and in those cases we will encourage them to  
6 use the upstream implementation.

7 Q. And that includes the Dalvik code; correct, sir?

8 A. No. I wouldn't say that.

9 Q. Well, was the Dalvik Virtual Machine installed on the  
10 Nexus S?

11 A. Yes, it was.

12 Q. Did Samsung make any changes to the Dalvik Virtual Machine  
13 that was installed on the Nexus S?

14 A. No, I don't believe they did on that particular device.

15 Q. The Dalvik Virtual Machine was installed on the Nexus One,  
16 correct?

17 A. That is correct.

18 Q. And were any changes made to the Dalvik Virtual Machine by  
19 the OEM on the Nexus One?

20 A. No. I'm not aware of any changes that were made on the  
21 Nexus One.

22 Q. And you're not aware of any changes to the Dalvik Virtual  
23 Machine on the Motorola Droid, correct?

24 A. I am not aware of any changes to the Dalvik Virtual  
25 Machine on the Droid.

1 Q. In fact, are you aware of any Android OEMs that have  
2 created an alternative implementation of the Dalvik Virtual  
3 Machine?

4 A. Yes.

5 Q. Who is that, sir?

6 A. Well, again, I think it -- it depends what we mean by  
7 "alternative implementation," but certainly our OEMs modify the  
8 Dalvik Virtual Machine for their particular devices.

9 So, for example, Samsung has made changes for many of  
10 their devices. Intel has made changes to support running  
11 Dalvik on the X-86 architecture.

12 Q. So you actually do know what changes your OEMs make to  
13 Dalvik?

14 A. We know that they do make changes. We don't know the  
15 specifics of those changes necessarily.

16 Q. Now, you have anti-fragmentation agreements with your  
17 OEMs, correct?

18 A. That is correct.

19 Q. And one of those is the Mobile Application Distribution  
20 Agreement?

21 A. That is not an anti-fragmentation agreement, but that is  
22 an agreement that we have with OEMs.

23 Q. Does it have anti-fragmentation provisions?

24 A. In certain versions of that document -- it's changed over  
25 the years -- it may reference anti-fragmentation. Typically

1 the specifics of anti-fragmentation are embodied in a separate  
2 agreement.

3 Q. Let me show you what may be one of those. 662.

4 (Whereupon, document was tendered  
5 to the witness.)

6 A. Thank you.

7 Q. I believe it's in evidence. If not --

8 THE CLERK: It's not.

9 BY MR. JACOBS:

10 Q. Do you recognize this form of agreement, sir?

11 A. I do.

12 MR. JACOBS: I offer TX 662 into evidence, your  
13 Honor.

14 MR. WEINGAERTNER: No objection.

15 THE COURT: Received.

16 (Trial Exhibit 662 received  
17 in evidence)

18 BY MR. JACOBS:

19 Q. If you look at paragraph --

20 MR. JACOBS: Can we publish it?

21 (Document displayed)

22 BY MR. JACOBS:

23 Q. If you look at Paragraph 2.1, it says that:

24 "The company will not take any actions that  
25 may cause or result in the fragmentation of

1 Android."

2 Do you see that?

3 A. In 2.1(a), yes.

4 Q. And this is an agreement between Google and Samsung,  
5 correct?

6 A. It appears to be yes.

7 Q. Now, there's another form of agreement, an Open Handset  
8 Alliance Cooperative Marketing Agreement. Are you familiar  
9 with that form of agreement, sir?

10 A. I am.

11 MR. JACOBS: If I may, your Honor?

12 THE COURT: Yes.

13 (Whereupon, document was tendered  
14 to the witness.)

15 BY MR. JACOBS:

16 Q. TX 77. Do you recognize that form of agreement, sir?

17 A. I do.

18 MR. JACOBS: Offer into evidence.

19 THE COURT: 77 I show as already in.

20 MR. JACOBS: Great.

21 (Document displayed)

22 BY MR. JACOBS:

23 Q. And this is an agreement between Google and HTC; correct,  
24 sir?

25 A. Yes.

1 Q. And it has an anti-fragmentation provision correct?

2 A. I believe it does mention anti-fragmentation in one  
3 section in this agreement, yes.

4 Q. And then there's an agreement called the Mobile  
5 Application Distribution Agreement; correct, sir?

6 A. That is correct.

7 Q. And you're familiar with that form of agreement?

8 A. I am.

9 Q. 2742.

10 MR. JACOBS: May I?

11 THE COURT: You may.

12 (Whereupon, document was tendered  
13 to the witness.)

14 THE CLERK: 77 is not in.

15 THE COURT: 77? I show it in this morning.

16 THE CLERK: This morning on the stipulation?

17 MR. WEINGAERTNER: I have an objection, your Honor.

18 THE COURT: I'm sorry. What is the new number?

19 MR. JACOBS: 2742.

20 THE COURT: 2742. Any objection?

21 MR. WEINGAERTNER: I object, your Honor. I think  
22 that relates to Acer, which is not in this case.

23 THE COURT: 2742.

24 MR. WEINGAERTNER: There is a motion in limine.

25 THE COURT: Let me see that.

1 (Whereupon, document was tendered  
2 to the Court.)

3 **MR. JACOBS:** It's true, your Honor, that this relates  
4 to Acer, but is a form of agreement that is used for other  
5 companies.

6 **MR. WEINGAERTNER:** I think there are others that are  
7 in the case that counsel could use, your Honor.

8 **THE COURT:** Lay the foundation with the witness and  
9 if he agrees with it, then it may come in.

10 **MR. JACOBS:** Actually, your Honor, I can use 83.  
11 May I?

12 **THE COURT:** You may.

13 (Whereupon, document was tendered  
14 to the witness.)

15 **BY MR. JACOBS:**

16 **Q.** So 83 is a Mobile Application Distribution Agreement  
17 between Google and HTC; do you recognize that?

18 **A.** It appears to be, yes.

19 **MR. JACOBS:** Offer into evidence, your Honor, if it's  
20 not in already.

21 **THE COURT:** 83 is in evidence.

22 **MR. JACOBS:** Perfect.

23 (Document displayed)

24 **BY MR. JACOBS:**

25 **Q.** I'd like to show you an email with an attachment, sir.

1 This is 363.

2 (Whereupon, document was tendered  
3 to the witness.)

4 Q. And it has some slides attached called "Android Strategy"  
5 and "Partnerships Overview." Do you see that?

6 A. I do.

7 Q. Do you recognize it?

8 A. I do.

9 MR. JACOBS: Offer into evidence your Honor.

10 MR. WEINGAERTNER: No objection.

11 THE COURT: The number again?

12 MR. JACOBS: 363.

13 THE COURT: It may be received in evidence.

14 (Trial Exhibit 363 received  
15 in evidence)

16 MR. JACOBS: No further questions.

17 THE COURT: Cross examination.

18 CROSS EXAMINATION

19 BY MR. WEINGAERTNER:

20 Q. Good morning, Mr. Brady.

21 A. Good morning.

22 Q. Or afternoon, either...

23 Before we begin, I thought I could ask you just a  
24 little bit about your background; where you were educated,  
25 where you were before you went to Google?

1 A. Sure. I went to Boston College in Chestnut Hill,  
2 Massachusetts.

3 Q. What did you study there?

4 A. Studied computer science.

5 Q. When did you start working at Google?

6 A. Started at Google in December of 2005.

7 Q. And during your time at Google, you had an opportunity to  
8 develop an understanding of Android?

9 A. Yes, a general understanding I would say.

10 Q. And do you have an understanding of the Android  
11 Compatibility Test Suite?

12 A. Yes, a general understanding of it. It's a large test  
13 suite, so...

14 Q. Absolutely. And what is the purpose of the Compatibility  
15 Test Suite, or CTS, Mr. Brady?

16 A. The purpose of the CTS is really to ensure that all  
17 Android devices that are made can run applications that are  
18 developed by Android developers using the Android SDK. So that  
19 the goal is really just to make sure that those devices are  
20 compatible; not necessarily the same, but compatible so they  
21 can all run those apps.

22 Q. Mr. Brady, is the CTS in some sense necessary because  
23 partners do tend to make changes?

24 A. Yes. If they didn't make changes, we could have saved  
25 ourselves a lot of time.



1 Q. And very briefly, I know this is a complicated question,  
2 but how does the CTS test for compatibility?

3 A. That's a good question. It -- I guess it simulates  
4 applications. So it does black box testing. Just like a  
5 third-party Android application would have no real  
6 understanding of what's going on under the hood of these  
7 Android implementations, the CTS also has no understanding of  
8 that. So it does what's called black box testing, where it  
9 passes in inputs and checks the outputs.

10 Q. And, Mr. Brady, can black box testing in any way test the  
11 internal implementation details of a handset?

12 A. No. It tests for the input and output.

13 Q. Is there any way to tell, for example, by running the CTS  
14 whether or not symbolic references are resolved in a certain  
15 way?

16 A. I don't believe so, no.

17 Q. And how about whether arrays are created in a certain way?

18 A. In a certain way, it could check -- you know, if it asked  
19 it to create an array of a certain size, it could then validate  
20 that the size was correct, but it couldn't tell how that array  
21 was created.

22 Q. And does the CTS ever get used to test the Android SDK,  
23 the development kit?

24 A. No. It's the -- again, the purpose of the CTS is to test  
25 Android devices, not the Android SDK.

1 Q. Could you just say a word or two about how extensive the  
2 CTS testing is?

3 A. Not as extensive as we would like. It's -- right now it's  
4 about 17,000 tests and it covers probably somewhere around 60  
5 to 70 percent of the Android Platform. So it's fairly  
6 extensive. It takes about eight hours or more to run on  
7 devices, but it's -- you know, it could be more extensive,  
8 sure.

9 Q. I'd like to bring up, if I could, Exhibit 749, please,  
10 which counsel had showed you earlier.

11 You may have a copy of it in front of you.

12 A. Which one?

13 Q. The Android 2.2 compatibility definition?

14 A. Yes.

15 (Document displayed)

16 Q. Just a quick question about that.

17 If you could turn to Page 20 of the that document,  
18 and I will direct you to Paragraph -- or Section 3.7, "Virtual  
19 Machine Compatibility."

20 And if you don't have a copy --

21 **MR. WEINGAERTNER:** Your Honor, I could approach --

22 A. I do, but it's not on page --

23 **BY MR. WEINGAERTNER:**

24 Q. I'm sorry, sir. Page 9 of 20. My apologies, my  
25 apologies, Mr. Brady?

1 A. Okay.

2 Q. About a third of the way down from the top?

3 A. Yep.

4 Q. If you could just read the first sentence there under 3.7  
5 "Virtual Machine Compatibility"?

6 A. Sure.

7 "Device implementations must support the full  
8 Dalvik executable (dex) bytecode  
9 specification and Dalvik Virtual Machine  
10 semantics."

11 And then it refers to "resources 10," which is a  
12 named link.

13 Q. And very briefly for the jury, what does "bytecode  
14 specification" refer to?

15 A. How to explain this? It's a document that basically says,  
16 you know, when this bytecode, which is -- how to put this.

17 It's basically like an alphanumeric string that comes  
18 in, a set of bytes. It tells it what action should be mapped  
19 to that. So, for example, one -- one bytecode might mean to  
20 add two numbers. One bytecode might mean to subtract two  
21 numbers.

22 So this Dalvik bytecode specification details all of  
23 these bytecodes and what the corresponding function that should  
24 be called is, or instruction that should be called.

25 Q. And the "semantics," what does that refer to?

1 A. "Semantics," again, is kind of how these instructions are  
2 called, I guess.

3 Q. And so the "bytecode specification" and the "semantics"  
4 that are referred to in the 3.7, which refers to "Virtual  
5 Machine Compatibility," do these requirements call for any  
6 particular way of actually operating the virtual machine?

7 A. Of operating the virtual machine? No. Again, they test  
8 the inputs and outputs, not the internal implementation.

9 Q. So, again, just to be clear, what capability, if any, does  
10 the Compatibility Test Suite have to determine the inner  
11 workings or inner structure of a Dalvik Virtual Machine?

12 A. The Compatibility Test Suite, really, the intention of it  
13 is to just test the inputs and outputs. So it's not written in  
14 such a way that it can test the internal implementation, again,  
15 because it's meant to mimic what third-party applications would  
16 see on these devices.

17 Q. Thank you, Mr. Brady. No further questions.

18 MR. JACOBS: Nothing further, your Honor.

19 THE COURT: May this witness be excused?

20 MR. JACOBS: Yes.

21 MR. WEINGAERTNER: Yes, your Honor.

22 THE COURT: Okay. Thank you, Mr. Brady. You're free  
23 to go.

24 (Witness excused.)

25 THE COURT: Next witness.

1           **MR. JACOBS:** Call Andy Rubin.

2           **THE COURT:** All right.

3                           **ANDY RUBIN,**

4 called as a witness for the Plaintiff herein, having been first  
5 duly sworn, was examined and testified as follows:

6           **THE WITNESS:** Yes, I do.

7           **THE COURT:** Welcome again. Please sit about this  
8 close and you know how to adjust the mic by now. Welcome  
9 again.

10                   Go ahead, counsel.

11                           **DIRECT EXAMINATION**

12 **BY MR. JACOBS:**

13 **Q.** Good afternoon, Mr. Rubin.

14 **A.** Good afternoon.

15 **Q.** A clean room approach doesn't protect against claims of  
16 patent infringement; correct, sir?

17 **A.** I don't think so, no.

18 **Q.** Because of the negative in there, I need to ask you that  
19 again.

20                   It is correct that a clean -- a clean room  
21 development approach does not protect against patent  
22 infringement claims, correct?

23 **A.** I'm not sure if I understand the question. You're asking  
24 me if developing software in a clean room protects somebody  
25 else -- protects us from somebody else making a claim against

1 it around intellectual property?

2 Q. Patent, sir.

3 A. Okay. We're on patents. That's the question?

4 Q. Yes.

5 A. Okay. Yeah, I don't think a clean room protects somebody  
6 else making a claim.

7 Q. Of patent infringement?

8 A. Of patent infringement.

9 MR. JACOBS: May I, your Honor?

10 THE COURT: Yes.

11 (Whereupon, document was tendered  
12 to the witness.)

13 MR. JACOBS: 2714.

14 BY MR. JACOBS:

15 Q. 2714 is an email from you, sir, to Mr. Gupta, correct?

16 A. Yes.

17 MR. JACOBS: Offer into evidence, your Honor.

18 MS. ANDERSON: No objection, your Honor. Thank you.

19 THE COURT: 2704, is that it?

20 MR. JACOBS: 2714.

21 THE COURT: Received in evidence.

22 (Trial Exhibit 2714 received  
23 in evidence)

24 BY MR. JACOBS:

25 Q. You see in the evidence, Mr. Rubin, you refer to -- there

1 is a back-and-forth between you about discussions that you're  
2 having with Sun. Do you see that?

3 A. Yeah. The email is "Discussions with Sun."

4 Q. And the email refers to Sun providing patent protection  
5 for Android, correct?

6 A. I do not see that. Which page are you referring to?

7 Q. If you look at the first -- maybe the second set of  
8 indentations under the "Okay."

9 "Had a long discussion with Eric tonight. He  
10 is cautiously skeptical. If you and I can  
11 define the open source license and include  
12 patent protection, then Eric will be a  
13 hundred percent supportive."

14 Do you see that?

15 A. Yes, I see that.

16 Q. And that's your text, correct?

17 A. I don't think so -- yes, I see that.

18 Let me see. I just need to get context here for a  
19 second. I'm sorry.

20 Q. Sure, take a second.

21 (Brief pause.)

22 A. Okay. Yes, I see that.

23 **THE COURT:** So is that, "Had a long discussion," is  
24 that something you wrote? That's the question.

25 **THE WITNESS:** It seems to be, yes.

1           **THE COURT:** All right. Go ahead.

2           **BY MR. JACOBS:**

3           **Q.** I'd like to show you Exhibit 616.

4           **MR. JACOBS:** May I, your Honor?

5           **THE COURT:** Yes.

6                   (Whereupon, document was tendered  
7                   to the witness.)

8           **BY MR. JACOBS:**

9           **Q.** Now, 616 is another exchange with Mr. Gupta. Mr. Gupta  
10           was at Sun; correct, sir?

11          **A.** Yes, he was.

12          **Q.** And in this exchange you expressed some concerns about  
13           Sun's patents, correct?

14          **A.** We were talking about non-asserts for patents, yes.

15          **Q.** And you wanted to be -- you wrote:

16                   "Vineet. This is not as good as it sounds.  
17                   A patent non-assert dependent on TCK  
18                   certification isn't open source. Sorry to  
19                   break the news to you, but you guys should  
20                   know this. This is exactly what Eric Schmidt  
21                   cautioned me. He said Sun won't do open  
22                   source."

23                   That's what you wrote, correct?

24          **A.** Yes, that's what I wrote.

25          **Q.** And so one of the concerns you're expressing here was that



1 you needed patent protection against Sun that was not dependent  
2 on TCK certification as you viewed your business model,  
3 correct?

4 **A.** No, that's not -- that's not my understanding of this  
5 email thread.

6 **Q.** Well, it reads:

7 "A patent non-assert dependent on TCK" --

8 **MR. JACOBS:** Sorry. 616 into evidence, your Honor.

9 **THE COURT:** 616. Any objection?

10 **MS. ANDERSON:** No objection, your Honor.

11 **THE COURT:** Received in evidence. Go ahead.

12 (Trial Exhibit 616 received in evidence)

13 (Document displayed)

14 **BY MR. JACOBS:**

15 **Q.** You write there about a patent non-assert. That's a  
16 patent non-assert from Sun; correct, sir?

17 **A.** In the context of this email, it's from either party  
18 that's contributing technology into the joint development  
19 partnership that we were seeking with Sun.

20 **Q.** It's a patent non-assert from -- the context of your  
21 concern is a patent non-assert from Sun; correct, sir?

22 **A.** Well, no. I mean, in the context of this email it was a  
23 joint development, so both parties were contributing technology  
24 and we were trying to agree on the appropriate open source  
25 license that gave both parties protection.

1 Q. You weren't concerned about your ability to grant a Google  
2 non-assert to Google, were you?

3 A. Well, in some ways you have to worry about whether the  
4 chosen open source licenses on each side are compatible. So in  
5 that regard, yeah, I was concerned.

6 Q. Part of your concern was a non-assert from Sun; is that  
7 correct, sir?

8 A. That was part of the concern, yes.

9 Q. Let me show you TX 22, which is already in evidence.

10 (Document displayed)

11 MR. JACOBS: May I?

12 (Whereupon, document was tendered  
13 to the witness.)

14 BY MR. JACOBS:

15 Q. This is -- TX 22 is in evidence. It's a copy of an  
16 Android presentation which was sent to Google's executive  
17 management group, correct?

18 A. Yes.

19 Q. And there's a description there of the proposed deal with  
20 Sun, correct?

21 A. This -- this presentation was to get approval from our  
22 executives for the Sun co-development partnership.

23 Q. And one of the things that's discussed on Page 8 of the  
24 presentation is that you would get patent grants, correct?

25 A. The proposal was an open source license from Sun and that

1 license included patent grants, I believe.

2 **MR. JACOBS:** 155. May I, your Honor?

3 **THE COURT:** Yes.

4 (Whereupon, document was tendered  
5 to the witness.)

6 **BY MR. JACOBS:**

7 **Q.** Now, 155 is an email to you from Chris DiBona announcing  
8 the Sun press release of open source code; correct, sir?

9 **A.** I believe it's a pre-press release that Chris DiBona  
10 shared with me, correct.

11 **MR. JACOBS:** Offer into evidence, your Honor.

12 **MS. ANDERSON:** No objection, your Honor.

13 **THE COURT:** Received.

14 (Trial Exhibit 155 received  
15 in evidence)

16 **BY MR. JACOBS:**

17 **Q.** And there was back-and-forth between you. You wrote at  
18 the upper part of the last part of the string: "They,"  
19 referring to Sun, "still had patents and trademarks; correct,  
20 sir?

21 **A.** Oh, that's what I wrote, yes.

22 **MR. JACOBS:** Can we highlight that, Mr. Lee?

23 (Document highlighted)

24 **A.** Yes.

25

1 BY MR. JACOBS:

2 Q. And so in 2006 you were aware that there were still patent  
3 issues associated with Java and the GPLing of Java, correct?

4 A. That's not what I was referring to in this email. I  
5 wasn't referring to any issues.

6 Q. You were referring to Sun patents there; correct, sir?

7 A. Yes.

8 Q. Mr. Rubin, did you ever do any review during the  
9 development of Android to investigate Sun's patent portfolio?

10 A. Only in -- only, you know, days before the suit was filed.

11 Q. And that was on account of a meeting that was held between  
12 Oracle and Google on July 20th, 2010; correct, sir?

13 A. I'm not sure of the exact date.

14 Q. A meeting that was held between the legal teams to discuss  
15 patents; correct, sir?

16 A. Yes.

17 Q. And so during the development of Android, you didn't do  
18 any review of Sun patents yourself; correct, sir?

19 A. Yes, that's correct.

20 Q. And you never asked -- and I'm leaving aside what the  
21 legal department might have done.

22 You never asked anyone on your team to do a review of  
23 Sun patents, is that correct?

24 A. No, sir.

25 Q. No, you did not do that, correct?

1 A. I did not ask for that, that's correct.

2 Q. Now, let me show you another exhibit. There might have  
3 been some confusion. 1116.

4 (Whereupon, document was tendered  
5 to the witness.)

6 MR. VAN NEST: Excuse me. What's the number,  
7 counsel?

8 MR. JACOBS: 1116.

9 BY MR. JACOBS:

10 Q. 1116 is an email from you to Alan Eustace dated April 1,  
11 2009; correct sir?

12 A. It is, yes, from me to Alan Eustace, yes.

13 MR. JACOBS: Offer into evidence.

14 MS. ANDERSON: No objection, your Honor.

15 THE COURT: Thank you. Received.

16 (Trial Exhibit 1116 received  
17 in evidence)

18 BY MR. JACOBS:

19 Q. And in this email you told Alan Eustace that the Open  
20 Handset Alliance was an illusion; is that correct, sir?

21 (Document displayed)

22 A. Let me see.

23 I didn't call the alliance an illusion. It was an  
24 industry -- it was an industry effort and we were trying to  
25 promote the industry's support of Android.

1 Q. And you were trying to give the illusion that the industry  
2 was behind Android, correct?

3 A. I don't think we were actively doing that. I think, you  
4 know, the industry was behind Android.

5 Q. Well, I'm just reading what you wrote to Mr. Eustace, who  
6 is proposing something like the OHA to you and you're  
7 responding, correct?

8 A. Can you ask it again?

9 Q. Mr. Eustace was talking to you about doing an alliance for  
10 netbooks, correct?

11 A. I see this just as a one communication between me and  
12 Mr. Eustace where I wrote to him.

13 Q. And you say:

14 "I forgot when we spoke about netbooks one  
15 thing."

16 A. Yes.

17 Q. Alliances?

18 A. That's right.

19 Q. And then you said:

20 "In general I think alliances don't work.  
21 When I set up the OHA, I did so because I  
22 wanted the operators to see our effort as  
23 more than Google."

24 You wrote that; right, sir?

25 A. Yes, that's my writing.

1 Q. You wrote:

2 "Giving the illusion that the industry was  
3 behind it gave us some advantage in dealing  
4 with the operators, who at the time were  
5 afraid of Google."

6 Do you see that?

7 A. Yes, I see that.

8 Q. And then you say:

9 "Structured it as a marketing organization."

10 Do you see that?

11 A. Yes, I see that.

12 Q. So the Open Handset Alliance, they didn't contribute to  
13 the development of -- members of the Open Handset Alliance in  
14 that capacity did not contribute to the development of Dalvik;  
15 correct, sir?

16 A. The alliance contributed Android. I would have to review  
17 the actual contribution whether it was Dalvik or not.

18 Q. It was a marketing organization according to this email;  
19 correct, sir?

20 A. That doesn't forbid them from contributing to the  
21 platform, which they did.

22 Q. It said in this email, "Alliances don't work." Are you  
23 suggesting that, in fact, you got software of value from OHA  
24 members that's incorporated in the virtual machine Dalvik?

25 A. I didn't say that, no.

1 Q. Well, are you suggesting that?

2 A. I don't know exactly if contributions were made for --  
3 specifically to the virtual machine. For example, Intel made  
4 some contributions to get Android running on their  
5 architecture. I don't know where their modifications went.

6 Q. The Android that was released on the Android public  
7 website, that was the Dalvik there and the dx tool and the SDK.  
8 Those were developed by Google; correct, sir?

9 A. I -- I don't know the answer to that.

10 Q. Now, in terms of what you encourage your OEMs to do, isn't  
11 it true that Android provides the basic tools to allow phone  
12 makers to create new models faster since they don't have to  
13 worry about the phone software?

14 A. I believe that's a statement I've made.

15 Q. And it's true that they can just focus on innovating a  
16 better design. They don't have to worry about adding  
17 multitasking and managing memory, correct?

18 A. What's the question?

19 Q. Is that correct? Is that what I just said, true?

20 A. Is my statement true? Yes, I believe --

21 Q. So you recognize that that's a statement you made?

22 A. Yes, I do.

23 Q. And you stand by that statement?

24 A. Yes.

25 Q. There are a few exhibits I need to --



1           **THE COURT:** We're going to break in about one minute.

2           **MR. JACOBS:** That will be perfect, your Honor. I'm  
3 going to give you 4, 5 and 20.

4           **THE COURT:** All right.

5           (Whereupon, documents were tendered  
6 to the witness.)

7 **BY MR. JACOBS:**

8 **Q.** They are a little out of order there. I'm sorry. Let's  
9 start with 4.

10           Do you recognize 4, sir?

11 **A.** No, I do not.

12 **Q.** And there is an email there, it says.

13           "Stephen may have access to a really useful  
14 slide that Andy from Android showed us  
15 during" --

16           **MS. ANDERSON:** Objection. This is not in evidence.  
17 Counsel is reading the context of the document.

18           **THE COURT:** Sustained.

19 **BY MR. JACOBS:**

20 **Q.** Do you see the line underneath in there, a reference to "a  
21 useful slide that Andy from Android showed us"?

22 **A.** What page is that on?

23 **Q.** It's right on the top. It's highlighted now on the  
24 screen.

25 **A.** Yes, I see that.

1 Q. And do you see the presentation that's attached to this  
2 email? It's an Android investor presentation dated April 5th,  
3 2005?

4 A. Yes.

5 Q. Do you recognize that presentation?

6 A. I'd need to review it. It looks like a version of a  
7 presentation -- this email string happened before I was at  
8 Google, so it's hard to put this all in context.

9 Umm, okay.

10 Q. Do you recognize that presentation, Mr. Rubin?

11 A. I don't recognize the exact version of the presentation,  
12 but it is a version of my investor presentation when I was at a  
13 start-up company.

14 MR. JACOBS: Your Honor, I would offer Exhibit 4,  
15 without the cover email, into evidence.

16 MS. ANDERSON: Objection, your Honor, given the  
17 witness's testimony about foundation. It's not being a precise  
18 copy that he recognizes.

19 MR. JACOBS: It's an Android investor presentation.  
20 Mr. Rubin was the CEO of Android on April 5th, 2005.

21 THE COURT: Is this copy that we have here in front  
22 of you, Mr. Rubin, is that one that you prepared?

23 THE WITNESS: Yeah. I would have worked on versions  
24 of this. I don't know if it was modified since -- by Google,  
25 but it looks -- I mean, it's really similar to my presentation.

1           **THE COURT:** Is the -- is that your objection?

2           **MS. ANDERSON:** That, in addition to hearsay, your  
3 Honor, given that this is a presentation apparently prepared at  
4 a time when Mr. Rubin was not employed by Google and it's being  
5 offered in this case. It would be hearsay on top of it, my  
6 original objection as well.

7           **THE COURT:** Was this document given to Google?

8           **THE WITNESS:** Yeah, probably during the discovery --  
9 or the M and A process.

10          **THE COURT:** What do you say to the hearsay issue?

11          **MR. JACOBS:** Well, it's a slide deck that is in  
12 Google's email string here on the cover, your Honor, and they  
13 are talking about a really useful slide that Andy showed us  
14 during one of our meetings.

15          **THE COURT:** What if an internal email attached a copy  
16 of the *Chronicle*?

17          **MR. JACOBS:** Google is the successor to Android. I'm  
18 sorry. I would take that off, your Honor. I would just use  
19 the presentation.

20          **THE COURT:** What I'm saying is -- well, we'll deal  
21 with it out of presence of the jury. It's now 1:00 o'clock.

22          **MR. JACOBS:** Okay.

23          **THE COURT:** Please remember the admonition. No  
24 talking about the case or research or anything else. We'll see  
25 you back here tomorrow regular time.

1 Thank you.

2 (Jury exits courtroom at 1:01 p.m.)

3 **THE COURT:** All right. Please be seated.

4 Mr. Rubin, you may step out. Please leave all these  
5 documents here. Please be back at 7:30 in the morning. No  
6 talking with counsel because you're on cross-examination.

7 All right. Thank you.

8 **THE WITNESS:** Thank you.

9 (Witness steps out.)

10 **MR. VAN NEST:** Your Honor, will we start with Mr.  
11 Rubin before 8:00?

12 **THE COURT:** Why does that matter?

13 **MR. VAN NEST:** In terms of his schedule. If he's  
14 here before 8:00, is that going to be sufficient?

15 **THE COURT:** 7:45 will be fine.

16 **MR. VAN NEST:** Thank you, your Honor.

17 **THE COURT:** The document that you're trying to get  
18 into evidence was not created by Google. It was created by --  
19 who was it created by?

20 **MR. JACOBS:** It was created by Android, sir, and  
21 Android is purchased by Google. So in that sense it may be  
22 adopted.

23 **THE COURT:** You know, Ms. Anderson, your side wanted  
24 to get into evidence documents created by Sun and the objection  
25 was made that it was hearsay and at your insistence I overruled

1 that saying that Sun equals Oracle.

2 **MS. ANDERSON:** That's correct, your Honor.

3 **THE COURT:** Now, you're trying to have it both ways  
4 and say that Android does not equal Google.

5 **MS. ANDERSON:** Actually, your Honor, the party in  
6 this case is named Oracle America. Previously it was named Sun  
7 Microsystems. They are one in the same. There is no  
8 distinction.

9 With respect to this particular document, it appears  
10 that the witness has testified that he participated prior to  
11 joining Google in drafts of a presentation like this. He  
12 hasn't established this is the one and this is being offered  
13 for purposes that appeared to be for its truth at a time when  
14 the witness wasn't employed by Google.

15 So there seems to be some overlapping issues here  
16 with respect to the single presentation.

17 **THE COURT:** May I see the document, please?

18 **MR. JACOBS:** It may be up here, your Honor.

19 (Whereupon, document was tendered  
20 to the Court.)

21 **THE COURT:** Is this being offered for the truth or is  
22 this being offered for notice?

23 **MR. JACOBS:** It's being offered for their state of  
24 mind as to their understanding of the role of Java and Android,  
25 its centrality of Java and Android.

1           **THE COURT:** What page proves that?

2           **MR. JACOBS:** Page 28 of 36, your Honor.

3           **THE COURT:** All right. 28 -- I'm sorry.

4           **MR. JACOBS:** It's 24 on the slide deck.

5           **THE COURT:** It says "Client Components."

6           **MR. JACOBS:** Yes.

7           **THE COURT:** What does this prove?

8           **MR. JACOBS:** This proves that as of this time, yet  
9 another instance of Android saying -- the Android folks saying  
10 that Java was a core part of what was going to be the Android  
11 platform. It says "Java licensed from Sun, modified by  
12 Android."

13           **THE COURT:** What was the year of this?

14           **MR. JACOBS:** 2005, just before Android was acquired  
15 by Google.

16           **MS. ANDERSON:** Your Honor, this is both before the  
17 acquisition. It's a most generalized statement by a third  
18 party to the litigation prior to the time this witness even  
19 joined Google.

20           It's certainly a hearsay issue, but it also has  
21 complexities dealing with 403 because it's not even the same  
22 party.

23           **THE COURT:** Well, I'm going to let this in. I'm  
24 going to at least let in Page 28.

25           Is there any other page you want to have in?

1           **MR. JACOBS:** I think maybe if we do it that way, your  
2 Honor if we could have the cover page as well, just to put that  
3 in context.

4           **THE COURT:** All right. Those two pages will come in.  
5 This is -- Android was -- the company Android was acquired by  
6 Google. This whole thing became a Google project. This is how  
7 the thing originated.

8           So I think that since a lot of Sun documents came in,  
9 I think it would be unfair not to let one like this come in.

10           It will be allowed for all purposes, not for just  
11 notice. And I am going to find that it is -- under the  
12 residual exception it has sufficient trustworthiness to be  
13 allowed into evidence without restriction. So those two pages  
14 can come in.

15           (Trial Exhibit 4, Cover and Page 28 received  
16 in evidence)

17           **THE COURT:** All right that's on Exhibit 4.

18           Now, I have some things to take up with you.

19           **MR. VAN NEST:** Does your Honor want the handout back  
20 this time?

21           **THE COURT:** Oh, yes, I would. That was the first  
22 thing --

23           **MR. VAN NEST:** I didn't put our name on it, but you  
24 can. We edited the top, but then we just rewrote it below that  
25 so it's crystal clear. That's all.

1           **THE COURT:**   Okay.

2           **MR. VAN NEST:**   That's from Google.

3                   (Whereupon, document was tendered  
4                   to the Court.)

5           **THE COURT:**   I guess I got an F.

6           **MR. VAN NEST:**   No, it's not bad.

7           **MR. JACOBS:**   The interesting question will be whether  
8 this double blind -- no, not double blind, but whether this  
9 duplicate bridge effort results in similar code.

10                   (Whereupon, document was tendered  
11                   to the Court.)

12           **THE COURT:**   Well, that's another interesting thing.  
13 All right.   Okay.   Thank you.

14                   Next, I want to have the Rule 50 argument tomorrow  
15 afternoon at 1:45.   Is that okay?

16           **MR. JACOBS:**   Yes, your Honor.

17           **MR. VAN NEST:**   Yes, your Honor.

18           **THE COURT:**   1:45.

19           **MR. VAN NEST:**   1:45.

20           **THE COURT:**   Of course, this double negative problem  
21 that you have.   We have this in every single trial, and it's  
22 the double negative problem that we just had quite a number of  
23 examples of and it arises when you do the following sequence.  
24 This is kind of like a specification in Java.

25                   There is a very concrete example where this comes up,



1 is where you have the negative in the question and end it with  
2 "correct," or start it with "correct." And it goes like this.  
3 This is the problem when you put in a negative. It says: "You  
4 did not give notice, correct?" And the witness says, "No." Or  
5 the witness can say "Yes." You have the problem either way.  
6 So let's say they say, "No." Does that mean no, it's not  
7 correct or does that mean no, we didn't give notice?

8           Either answer is perfectly -- the answer "no" depends  
9 on how the witness understood the question. And when you read  
10 the cold record, there is no way to know. And it's your  
11 record. If you want to make it that way, okay.

12           So I'll give you the example again. "You did not  
13 give notice, correct?" Witness says, "No." Or witness says,  
14 "Yes." Either way there is a problem. "Yes, it's correct."  
15 Or, "Yes, we did give notice." What is the witness really  
16 saying there?

17           So here is how you fix that. You say, "You didn't  
18 give notice, did you?" Didn't we have this problem -- didn't  
19 we go over this in Phase 1?

20           **MR. JACOBS:** We did, your Honor.

21           **THE COURT:** We did. I remember Mr. Norton was very  
22 good at asking the right form of the question. "You didn't  
23 give notice, did you?" Then that solves the problem. Or, you  
24 could just say, "Did you give notice?" And the answer will  
25 have to come back, "No."

1           You know, here is -- this is something that Irv  
2 Younger did to us. There are some of you old enough to  
3 remember to Irv Younger was.

4           **MR. VAN NEST:** Yes, indeed.

5           **THE COURT:** He said, "You've got to ask a leading  
6 yes. You've got to ask a leading question." And all of you,  
7 when you were young, went to the NITA conference and they said,  
8 "You've got to ask leading questions."

9           So when you're trying to establish a negative, you  
10 want to say, "You didn't do this, correct?" And that's what --  
11 but, you know, when you are asking a -- there is another form  
12 of question which they call a narrowly directed question. "Did  
13 you give the notice?" "No." So, answer no. So that means,  
14 you don't have to -- if it's a narrowly directed question, you  
15 don't even have to -- you don't even have to have a leading  
16 question.

17           However, because of Irv Younger and NITA and all of  
18 those things if you insist on asking a leading question, which  
19 you have the right to do, at least ask one that doesn't have  
20 the double negative problem, which would be: "You didn't give  
21 the notice, did you?" Or, you can flip it around if it's a  
22 positive, "You did give the notice, didn't you?"

23           You don't really have -- the double negative problem  
24 doesn't come up when the point is a positive one. It's only  
25 when there is the negative built in there.

1 Now, you should not feel badly because in the  
2 hundred-plus trials that I have done, every single side in  
3 every single trial, they cannot help themselves. They do it  
4 anyway.

5 And I just bring it to your attention because when  
6 you read the cold record and start arguing to me that you're  
7 entitled to Rule 50 because of some of these answers that are  
8 double negative answers, you won't -- it won't work. Your  
9 record is -- now sometimes from the inflection we know what the  
10 witness means, and other times the witness will bail you out by  
11 saying, "Correct." The witness is doing you a favor. They  
12 say, "Correct." That saves you in that instance. But when  
13 they just say "Yes" or "No," you then have to ask it again.  
14 And it doesn't do any good to put the "correct" at the front.  
15 Like, "Isn't it correct that you didn't give the notice?"  
16 Like, "Yes, we have no bananas." Like one of those problems.  
17 It doesn't do any good to put the "correct" part at the front.  
18 It just perpetuates the same problem.

19 This is -- this is not an order. This is just a word  
20 to the wise to do what you can to make the records better.

21 All right. So you have given me your comments on my  
22 draft. The Rule 50 is set up for tomorrow. I have nothing  
23 more to take up, but I'm all ears if you have something to take  
24 up with me.

25 **MR. JACOBS:** Yes, your Honor. We seek further

1 guidance, perhaps agreement on -- for shorthand I'll call it  
2 the Jonathan Schwartz issue.

3 Will we hear evidence in Google's case, argument in  
4 Google's closing about whether Sun made an affirmative decision  
5 not to sue Google and whether it concluded that it had weak  
6 grounds for a legal claim?

7 The reason we need to know this is we have a witness  
8 who we would bring. We have witness availability issues. And  
9 so I'm -- I raised this with Google's counsel at the last  
10 break. We haven't had a chance to confer since then, but I  
11 don't want to lose the moment to nail this down.

12 **THE COURT:** Are you bringing Mr. Schwartz back for  
13 the defense case in Phase 2?

14 **MR. VAN NEST:** Hadn't made that decision, your Honor,  
15 but Mr. Jacobs asked me to consider it and I'll do that and let  
16 him know as soon as I can.

17 **THE COURT:** Well, I will say this. Anything that  
18 goes to an equitable defense I'm going to hear separately from  
19 the jury. If it has something to do with an issue that would  
20 be for the jury to decide, then we ought to talk it through.

21 But I do not think that he should be saying something  
22 like, "We didn't have grounds to sue." Because that's what the  
23 jury is here to find out, whether there were grounds to sue,  
24 whether there were grounds to sue based on the instructions of  
25 law that I give them and not based on whatever he was being

1 told at the time or just his own musings.

2           **MR. VAN NEST:** I'm certainly not going to call him  
3 back to say that. He's already said that. That's in the  
4 record. I'm not going to have him come back and repeat that.

5           **THE COURT:** Well --

6           **MR. VAN NEST:** But, I may have -- there may be other  
7 relevant testimony.

8           **THE COURT:** Well, are you going to argue that in your  
9 argument?

10           **MR. VAN NEST:** Your Honor, I haven't heard all the  
11 evidence in Phase Two. So it's a little bit early, I think, to  
12 be asking me what my closing argument is going to be. I  
13 haven't even presented my case yet.

14           **THE COURT:** That's a fair point.

15           Mr. Jacobs, I don't think I can require Mr. Van Nest  
16 to reveal how he's going to argue. Right now he is -- as the  
17 way things stand, he is entitled to use the evidence that was  
18 received in Phase One in his closing.

19           So I am -- you asked for my guidance. I can't -- I'm  
20 not going to -- really, what lawyers mean by that is they want  
21 me to blurt out some ruling. I'm not going to do that.

22           **MR. JACOBS:** So -- and I don't want to aggravate -- I  
23 don't want to aggravate the Court, but if that is where we are,  
24 then we will have a witness who will testify that what  
25 Mr. Schwartz said is false.

1           **THE COURT:** Well, go ahead. I'm not -- subject to  
2 motions in limine, you can -- I can't stop you.

3           Yes, Mr. Van Nest.

4           **MR. VAN NEST:** I certainly told Mr. Jacobs that I  
5 would be willing to confer on it. And I meant that, and we'll  
6 do that. If there's a problem, we'll bring it to Your Honor's  
7 attention.

8           **THE COURT:** All right. To be fair to Mr. Jacobs, he  
9 needs to know whether he's going to ever hear in closing  
10 argument again about the statement made by Mr. Schwartz in the  
11 first phase, that there were no grounds to sue.

12           And if -- if your answer to that is equivocal, then I  
13 can understand he wants to meet that head on right now.

14           On the other hand, if you gave him your word that  
15 that's not going to come up again, then maybe that would solve  
16 the problem.

17           These are just me talking out loud. I'm not making  
18 any ruling on this.

19           **MR. VAN NEST:** Understood.

20           **THE COURT:** All right. What else?

21           **MR. JACOBS:** Thank you, Your Honor.

22           **MR. VAN NEST:** I don't think we have anything else.

23           **THE COURT:** Okay.

24           **MR. VAN NEST:** Thank you, Your Honor.

25           **THE COURT:** I have your time precisely, but I haven't

1 tallied it up. You each have 660 minutes, and no one is even  
2 close to that. I'll give you your time tomorrow.

3 **MR. VAN NEST:** Thank you.

4 **THE COURT:** Have a good evening.

5 (At 1:18 p.m. the proceedings were adjourned until  
6 Wednesday, May 9, 2012, at 7:30 a.m.)

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E X H I B I T S

<u>TRIAL EXHIBITS</u>	<u>IDEN</u>	<u>VOL.</u>	<u>EVID</u>	<u>VOL.</u>
4 - Cover and Page 28			3151	18
77			2939	18
79			2939	18
81			2939	18
82			2939	18
82			2940	18
83			2939	18
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87			2940	18
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155			3139	18
286			2939	18
310			2940	18
347			3120	18
363			3127	18
388			2940	18
426			2940	18
616			3137	18
662			2940	18
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We, KATHERINE POWELL SULLIVAN and DEBRA L. PAS,  
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U.S. Court Reporter

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Tuesday, May 8, 2012